Industrial FINISHING

Published Monthly in the Interest of Modern Production Finishing

In FINISHING
It's what finish
to use and why

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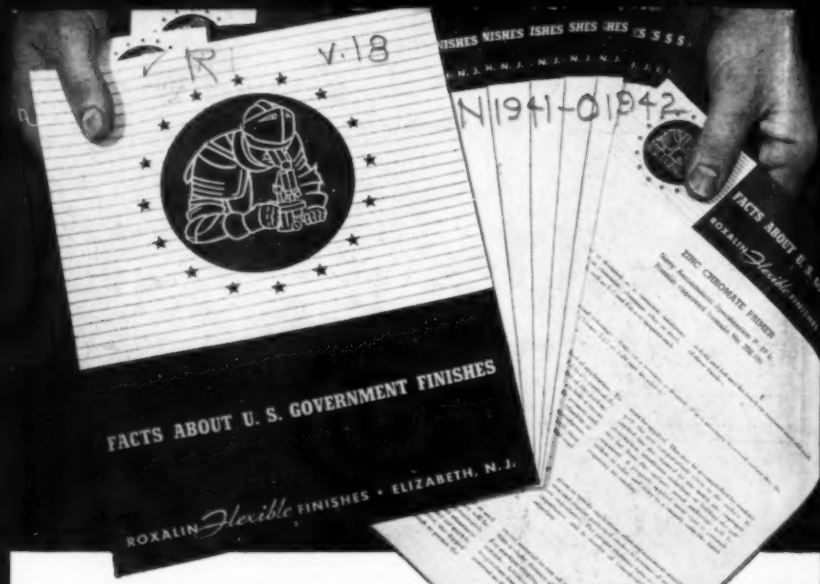
FACTS ABOUT U. S. GOVERNMENT FINISHES
ROXALIN Flexible FINISHES • ELIZABETH, N. J.
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FACTS ABOUT U. S.
ROXALIN Flexible FINISHES
ZINC CHROMATE PRIMER

DEFENSE CONTRACTORS NEED THESE "FINGER-TIP" FACTS!

IF you have been hampered in figuring on Government Contracts involving specification finishes (which are usually identified only by code numbers) because of lacking material costs, thinning, drying, application data and other information, chances are you will find a quick answer in the convenient file folder "FACTS ON U. S. GOVERNMENT FINISHES".

This file folder contains detailed information on important Army and Navy specification finishes and will prove invaluable in helping you establish the most efficient schedule along with accurate unit costs.

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Roxalin's orders for defense materials are being handled with the same dispatch that has made possible our statement "93% of our orders are shipped the day received".

TELLS WHERE AND HOW TO USE SPECIFICATION PAINTS, ENAMELS, LACQUERS

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I'LL GIVE YE

THREE DOLLARS

FOR EVERY $1.00 YOU NOW EARN!

Time . . . Labor! Those are two of the "bottlenecks" of production that most manufacturers are faced with these days! In sanding . . . BOTH of these bottlenecks can be broken with "SANDY", the Sterling Surfacer. Because (1) "SANDY" will do your sanding 3 TIMES FASTER, or (2) "SANDY" can do the same amount of sanding that THREE of your fastest hand-sanders can do! No wonder so many manufacturers have turned to "SANDY" to help them overcome these problems. A Sterling engineer will gladly help you on any sanding problems you may have. Write for more information TODAY!

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Please RUSH "Hints on Sanding Savings" to me at once!

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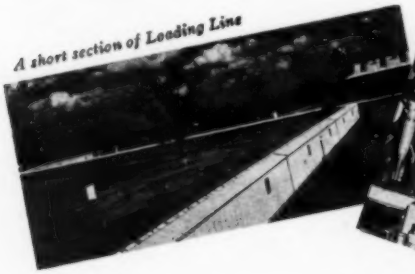
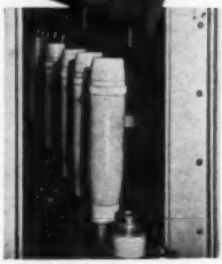


ZAPON FINISHES SPEED BOMB AND SHELL PRODUCTION



Infra-Red Forced Drying

In the great Ordnance Plant at Ravenna, Ohio, which Atlas Powder Company is operating for the Government, Zapon lacquer enamel is doing its part, providing a protective and identifying finish for bombs and shells. This special Zapon lacquer enamel far exceeds Army minimum specifications for such material, and is designed to give utmost protection in storage or in field service.

Zapon's bomb and shell coating is uniform, has unsurpassed anchorage and may be air dried or force dried. It is especially adaptable to infra-red forced drying. At Ravenna, a most elaborate and well timed spraying and drying production line has been evolved.

Manufacturers who have shell or bomb finishing problems may be interested in a reprint of an exhaustive article describing the Ravenna finishing operations, which is available on request.

ZAPON DIVISION ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. Western Sales: North Chicago, Ill.

INDUSTRIAL FINISHES

Eighteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Published Monthly in the Interest of Modern Production Finishing

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Contents of This Issue

Letters from Readers of Industrial Finishing 4
Industrial Finishes for Non-Defense Orders 12
Product Design with Suitable Finishes 16
How Material Scarcity May Affect New Furniture Finishing 21
How to Properly Rub Furniture 26
Organic Solvents 30
Dr. of Finishing Ills—The Service-Man 42
New Materials, Supplies, Equipment 52
Questions; Answers 60
Editorial 80
"Classified Advertising" Section 87
Index to Advertisers 88

Frolics in the Finishing Room—7 ... 20
Book on Coal-Tar Solvents ... 20
New and Improved Solvents ... 20
Blast-Cleaning Metal Parts ... 24
Free Bulletin on Portable Sanding and Rubbing Machines ... 24
Ruth Hammond Succeeds Rosalie Flank at Furniture Mart ... 24
New Manual on Near-Infra Red Ready for Distribution ... 38
American Chemical Paint Co. Completes New Plant at Ambler ... 48
Shabby Shoes—Accidents, Sickness ... 48
Ultramarine Blue Specifications ... 58
Mahogany on Walnut ... 74
Lenoir Wood Finishing Co. ... 79
Spray Painting Book—$1.50 ... 79
Nature Helps Balance Defense Shortage ... 79
Fire-Retardant Paints; Borax ... 84
Finishine Laboratories Expands ... 85
Bleaching Wood ... 85
Corrosion Control Corp. Moves Into Its Own New Building ... 86
Rustproofing Engineer ... 86
New Report About Shellac ... 86
Bulletin on Product Washing Machines ... 87
"Protective Coatings, Inc." is What Its Name Implies ... 87

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Letters from Readers...

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Repair Putty

Please give us the name of a company that can supply putty to fix defects in wood caskets—something that will stain the same as the woodwork, to match the finished product.—M. Casket Co.

Enamel Pumps

We have noticed with particular interest the illustration at the bottom of page 27, in your August 1941 issue. We are wondering if it would be possible to secure a print of this illustration for use in our house organ, the Viking Vacuum.

It shows, to very good advantage, a string of Viking paint and enamel pumps and, of course, we are always eager to obtain such photos. Thank you kindly for your consideration.—Viking Pump Co., Cedar Falls, Ia.

Photograph sent promptly.—Ed.

Metal Filler Wanted Again

In reading the September issue of INDUSTRIAL FINISHING, we are very much interested in the comments under "Letters from Readers." On page 7 under the heading, "Wanted, Metal Filler", we find the problem of an English manufacturer is the same as the problem we have encountered. It has been very difficult to secure cold-rolled sheets, consequently we are building our cabinets out of any material we can secure, using hot-rolled and even galvanized sheets for cabinet work.

We would appreciate it very much if you could furnish us with the information as to the filler that could be used to fill spot-weld marks, cracks, etc. We are baking the cabinets at 250° F. so we would need a filler that would stand that temperature.—L. Mfg. Co.

Lime Oak Finish

We have noticed the article on page 6, on "Lime Oak Finish", appearing in the September issue of your magazine. We specialize in the Lime Oak Finish; in fact, we originated many of the methods now used in producing it. We would like very much to be put in touch with the inquirer in this case.—The Stille-Young Corp.

Paint for Metal Outside

Can you recommend the names of manufacturers of paint used on sheet metal for outdoor use. We intend to use this paint as an emergency substitute for galvanizing and naturally we are in a hurry for this information. —U. L.

Finishing Plywood Aircraft

With reference to your article on "Finishing Plywood Aircraft" in the March, 1940 issue of INDUSTRIAL FIN-

SURFACE—SERVICE

NOW THAT our products are known as "Protective Surface Coatings," we suggest new finishes which conserve—yet enhance the beauty of your finished surface, and prolong the life of your furniture.

Many new and unusual finishes for the coming markets are already in work in our Finish Studios.

By appointment, you may ship your new numbers to our Laboratories for complete finish in our latest color creations and unusual finishes.

Your finished samples will be delivered direct to your space at the Marts if desired. May we serve you?

V. J. DOLAN & COMPANY, INC.

Mnfrs. of "Unquestionable Quality" Industrial Finishes

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Air Dry or Force Dry?

Perfection Synthetic Flat Finishes will do both. Air dry overnight or force dry in 1½ hours at 140°.

Panels coated with Perfection Flat Varnish can be immersed in water for 30 days without turning white or showing any other ill effects. Write us and we'll send panels and samples—and also a panel in water for 30-day immersion test.

FURNITURE FINISHED WITH A LIQUOR PROOF WATER PROOF FINISH PERFECTION PAINT & COLOR CO. INDIANAPOLIS

PERFECTION FLAT FINISHES contain no stearates or other flattening agents. They are made 100% from gum, hence are as clear as gloss varnish—entirely free from milky appearance of conventional flat varnish.

Also, PERFECTION SEALER VARNISH covers 65% more surface than lacquer sealers—try them today.

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Indianapolis, Indiana

Priority Orders . . .

UNITED'S DEFENDER LINE

Defense products often require specially formulated finishes to meet the exacting conditions of wear, tear and abuse which they will receive in actual use. United's chemists have developed the DEFENDER LINE of production finishes to meet the extraordinary specifications and requirements of defense products. If you have a production finishing problem on priority rated products you will find a quick solution among UNITED'S DEFENDER Line of production finishes.

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HAVING TROUBLE GETTING LACQUER SEALERS AND FINISHING COATS?

are.
Those who have conveyor ovens or other force-drying equipment should not have much trouble keeping up production.
Synthetics are out of the ques-

(From a guest editorial in INDUSTRIAL FINISHING, October, 1941.)

GKS WOOD FINISH FORCED DRYING SYSTEMS

enable you to secure satisfactory production using varnish sealers and final coats while the shortage of lacquer solvents exists . . . and to switch back to the use of former materials at any time should you so desire. Complete finishing systems, including spray booths, dryers with humidity control, conveyors, etc., are designed, built, and installed by GKS engineers to fit your individual requirements.

Phone, Wire, or Write for Additional Information

GEORGE KOCH SONS, INC. EVANSVILLE INDIANA

ISHING, we would appreciate receiving copies of the complete specifications for finishing aircraft plywood, according to the methods described in your article.—F. R. L. (Canada).

We are referring your inquiry to Mr. Roy B. Anderson, author of the article and requesting that he send you this information promptly. Mr. Anderson is with the Wipe-On Corp., 105 Hudson St., New York.—ED.

Flock Article

We notice in the October issue of INDUSTRIAL FINISHING that you have an article on Flock Finishing by a Mr. John F. Wagner. We are interested in this article and would appreciate your advising us the address of this man so that we may contact him.—The Rayon Processing Co. of R. I.

Tumbling Bronze Powder Finish

In your October issue of INDUSTRIAL FINISHING, a letter on the bottom of page 4 raises the question which we are interested in, namely tumbling items in bronze powder. Would you be kind enough to give us the same information you gave the others?

There is also the question on page 5, asked by the C. S. Corp., with regard to tumble-sanding and finishing small objects, which is of interest to us.—J. W., President of Gift & Novelty Mfg. Co.

Wood Fillers; Al. Substitute

In your September issue there was an article by F. R. Boynton on "Wood Fillers". Will you please give us the name of this filler and the manufacturer of same?

We have been using aluminum powders which, of course, are very difficult to procure. Will you please advise the name of the manufacturer and material whom you recommend as having substitutes for aluminum finish?—D. H., Manager of Casket Factory.

Furniture Refinishing

I am interested in starting a business of rendering refinishing service for furniture. I shall appreciate your advice concerning a school that teaches refinishing, or your recommendation concerning suitable books or literature that can be secured or purchased.

I shall also appreciate information concerning what type and quantity of

Direct Drive "LIGHTNIN" Portable Mixer used for maintaining proper consistency and suspension of pigment in a special enamel. Where colors vary frequently and quantities are not too large, this type of agitator can be conveniently changed from one tank to another.

KEEP PIGMENTS IN UNIFORM SUSPENSION AND REPLACE EVAPORATION LOSSES WITH A "LIGHTNIN" MIXER

With primer dipping tanks operating 24 hours a day, consistency must be constantly maintained in the quickest, most dependable manner . . the reason more "LIGHTNIN" Mixers are being specified than ever before.

The powerful "LIGHTNIN" Double Mixing Action drives pigments up off of tank floor and keeps suspension uniform. The complete bottom-to-top turnover plus a slow rotating which completely eliminates dead spots thoroughly mixes in thinner to make up for evaporation losses.

If you have a problem keeping pigments in suspension or keeping consistency uniform, consult us. Our specialized mixing experience is yours for the asking.

MIXING EQUIPMENT COMPANY, INC.

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We offer to all industries equipped for baking finishes this highly perfected, heat-converting, synthetic enamel.

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We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

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Baking schedule is of great flexibility, permitting from 5 - 50 minutes at 250 - 375° F.

FORM - A - ROC

No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

FORM - A - ROC

MADE BY

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue

CLEVELAND, O.

equipment is necessary. I am writing to you upon the recommendation of one who formerly subscribed to your magazine and who is now in the finishing game but in the automobile division.—R. J. F.

Solvent Recovery

We will be pleased to receive from you, a list of manufacturers in a position to send us literature on reclamation equipment for lacquer thinner. Present defense requirements indicate that this material will have to be conserved wherever and whenever possible, and we are interested in obtaining such a device of approximately a 50-gallon capacity.—M. G., In charge of Purchases for a Dental Mfg. Co.

Counter Covering

Where can we secure sheet Caf-O-Lite, or other synthetic material that can be secured in various size sheets, suitable for covering counter tops and table tops.—Wood Kraft Novelty Co.

The material you have named is a product of Caf-O-Lite Co., Muskegon, Mich.—Ed.

To Repair Porcelain Enamel Signs

I have a problem and hope you can help me. Where I work we have signs finished in porcelain enamel. These signs become damaged and it is up to me to repair them. We have been using a lacquer called Z——— for the white part and a blue enamel for the blue part.

I am not satisfied with this method, and if I recall rightly there is some kind of a material to use to repair chipped porcelain enamel. If you could give me the names of companies making such a product I would greatly appreciate it.—B. C.

We have submitted the names of two manufacturers whom we believe can supply what is wanted. We will welcome suggestions from readers.—Ed.

Paint for Steel Speed Boat

We noticed, on page 75, of your INDUSTRIAL FINISHING for August, an inquiry relative to a paint for a steel speed boat.

If your reader will go to the nearest United States Engineer's Office, say in St. Louis, Rock Island, Cincinnati, Pittsburgh, or those affiliated at those

BITUMINOUS COAL plays a large part in the manufacture of STILLE-YOUNG STAINS.

Black coal into coke—coke into coal tar—coal tar into oils and distillates, from which are made eventually brilliant dyes of the finest caliber!

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Modern scientific laboratory analysis constantly maintains this standard of quality.

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Enthone baked enamel strippers cut actual stripping time from HOURS TO MINUTES . . . quickly and safely removing baked enamels of the urea-formaldehyde, resyl, glyptal, glycerol-phthalic anhydride and bakelite types as well as many long-oil types of japans and air-dry enamels. Non-caustic, will not etch or attack any metal. Strip rapidly-rinse freely!

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TABER INSTRUMENT COMPANY

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Designers and Builders of Precision Scientific Apparatus

offices, we are quite sure that he will be able to get a satisfactory type of formulation from them for the work he contemplates.

Being industrial people and not having retail outlets, we are naturally not interested in an individual consumer such as "P. R." in this instance obviously is, but if you care to tell him, our best recommendation would be a 25-gallon Bakelite varnish, utilizing a zinc chromate pigment for the primer, and the same type of varnish with a suitable pigment to get the proper finish coat in the color he desires. The reason that I suggested he contact the Engineer's Office is because they have had, for years, trouble with the steel which they are using in the structures up and down the river. They have finally arrived at the 25-gallon length varnish as being the best they have been able to discover.

They have also found that the use of a chemical inhibitor, built primarily of orthophosphoric acid, increases the life of the coating that is put on structures for underwater use.

You are welcome to whatever information is contained in this letter . . . and if we can be of any further assistance, we will be glad to hear from you.—Thompson & Co., Pittsburgh, Pa.

American Polytect Corp.

I will appreciate the favor if you will send to me, the full address of the American Polytect Corp.—M. E. R.

It is 84 University Place, New York, N. Y.—ED.

Shellac Information Bureau Defends Its Advertisement

There appears in your issue of September 1941, a letter from Mr. H. B. Young, Vice President of the Stille-Young Corp., criticizing the advertisement of the Shellac Manufacturers Assn. that appeared in the July issue.

From the last paragraph of his letter it would appear that Mr. Young is confusing the merchandising of finishing materials with the knowledge of the processes involved in their use. He claims that we are guilty of overstatement, using as his text our advertisement, "Manufacturers are realizing that shellac is tops as a sealer and undercoater for lacquer."

This, we insist, is not an overstatement for the following reasons. We claim in our advertisement that, "A good undercoat for lacquer must resist lacquer solvents." Mr. Young states that, "Shellac does not resist lacquer solvents and that shellac gum

(Continued on page 76)

LACQUER and SYNTHETIC ENAMEL FINISHES

By Ray C. Martin

The author takes up the raw materials that enter into the manufacture of these important finishes and includes laboratory formulations and testing, manufacturing methods, requirements of many types of finishes for various industries and products, methods of analysis, methods of applying finishing materials, chapters on furniture finishing and automotive finishing, a glossary of terms used in the industry with clear explanations of what they mean, and an alphabetical index of subjects covered in the book. Price $5.50 postpaid; cash with order.

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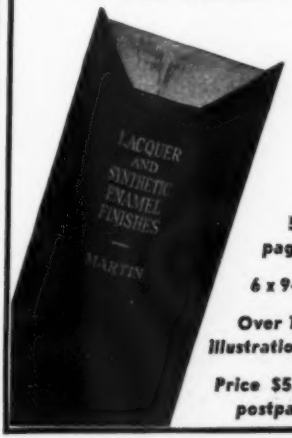

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Industrial Finishes for M

BY R. J. FAIRBURN
Zapon Western Division
Atlas Powder Company

WHEN THE Editor of INDUSTRIAL FINISHING asked us, "What happens to the non-defense paint orders in this last quarter of the year 1941?", we decided that the best answer would be a trip behind the scenes. Suppose you go along while we visit Joe Doakes, General Manager of the John Doe Industrial Paint Co. This scene is typical of nearly any establishment where finishes are supplied for industrial use.

The time is early morning. Joe is in conference with his sales manager and chief order clerk. The head of the stores department is there too.

Defense Orders With High Preference Ratings

"Let's see the defense orders first", suggests Joe. Orders with high preference ratings are scanned. Materials are allocated for them and arrangements are made to replenish the stock. With a minimum of delay, these orders will be hustled through the office and into the factory. They will be shipped on the dates specified.

Non-Defense Orders With Lower Preference Ratings

"Now the orders with lower preference ratings", says Joe, and they are scanned.

"Well! Here's one from the Hot Shot Oil Burner Co.," exclaims the sales manager. "When Bill called there two weeks ago they were ready to lay off all their help and close their doors. Couldn't get vital materials. At Bill's suggestion, they applied for a preference rating and I see that it has been granted."

"Good for them," says Joe warmly. "We've shipped them paint for ten years and I'd hate to have to refuse them now."

"A lot of small concerns can get help from OPM if they will show that they are sincerely trying to get defense orders. Uncle Sam wants to keep these plants going."

"It seems that we can get raw materials to fill most orders with even low preference ratings," observes the order clerk.

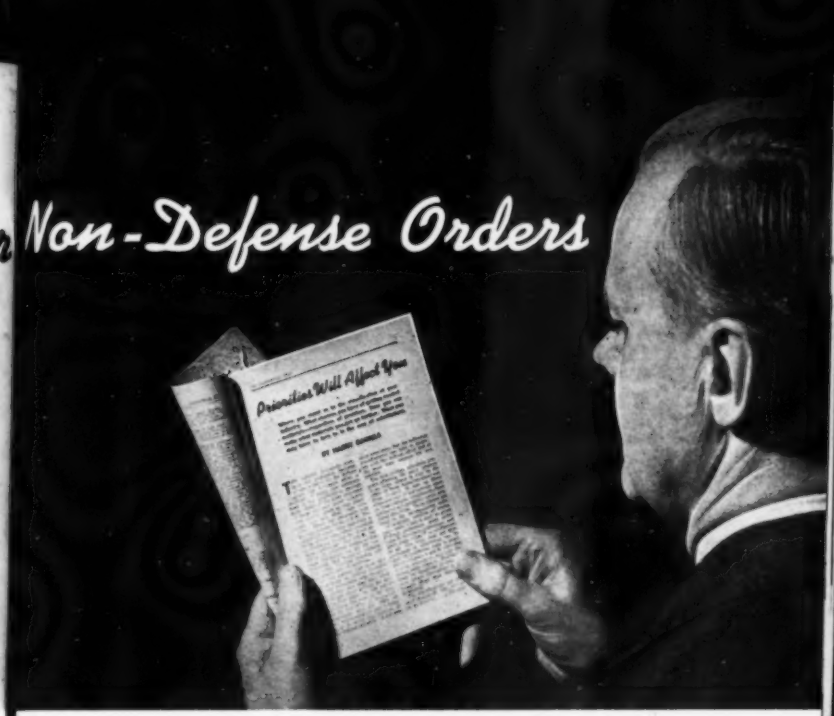
"So far, yes," answers Joe. "As material shortages become more acute, it will be difficult to fill many of these orders. It is OPM's thought that before that happens many of these concerns will have obtained defense work either as individual bidders or as a member of a pool."

Orders With No Preference Ratings

"Here is the last pile of orders, Mr. Doakes," says the order clerk, "these have no preference ratings."

"These are the ones that break

for Non-Defense Orders



your heart," groans Joe. Then heaving a gusty sigh he says, "Let's have the first one."

White Pigments

"Hm-m; this is for white enamel. We've been scraping the bottoms of the white bins for several weeks."

"We do get a little trickle of white pigments over what is needed for defense orders," observes the stock clerk.

"This is from the Icicle Refrigerator Co.," pleads the sales manager. "We sweat blood to build up that account."

"I know, Fred," consoles Joe, "but they want 1000 gallons. With their production curtailed, that is two months' supply. We'll allot them 500 gallons and distribute the other 500 gallons among other deserving accounts. We'll treat all of our old customers alike as long as possible."

"What causes this shortage of white pigment?"

"Perhaps the first cause is the great increase in business. The paint industry as a whole is about 30% ahead of 1940 production. Many industrial concerns are 50% ahead of 1940.

"White is used on refrigerators, steel kitchen cabinets, stoves, washing machines, ironing machines, food mixers and many other items. Many people have just recovered sufficiently from the last depression to buy these items. Many old homes have been remodeled and reequipped. Thousands of new homes have been built and most of

the older apartment buildings have been reequipped.

"The two most popular pigments for high-grade white enamels, such as are used for this class of work, are zinc and titanium. As you know, zinc is on the critical list of vital defense materials. Titanium is used in steel alloys, welding rods and other items used extensively for defense work.

"There was some hope that the paint industry would get more of these pigments when the automobile tire industry quit making white sidewall tires. It looks now, however, like much of this supply will be taken over by the paper industry. I am told that they use some of this pigment for their glazing processes. They have been robbed of most of the chlorine for bleaching, you know."

Lacquer Solvents

"This order is for 500 gallons of lacquer thinner. We have not sold to this concern for a couple of years."

"We've been calling on them regularly," say Fred. "They have been buying from the Cureall solvent people at a few cents a gallon under our price."

"Toluol, alcohol and acetates are derived from basic chemicals going into the munitions program, therefore lacquer solvents are too hard to get. Tell them 'No, thank you. Try us again when the supply is more plentiful,'" instructs Joe.

Hammer Finish

"This one, for a baked hammer finish, is from an old customer, Mr. Doakes."

"Hammer finish needs a metallic bronze powder. While we have some stock—obtained at an exorbitant price—it is only a matter of time when it will be very hard to get. This formula also includes urea - formaldehyde resin vehicle. It too is disappearing from the market. Then too, the spatter liquid uses solvents that are on the minus list. In this case they might like our new Stipple-blend finish. It is applied in much the same way as 'hammer' and does not require any of these hard-to-get materials. In some combinations of colors, it is even more pleasing than hammer."

The next several orders are from old customers. The quantity is small and in line with their usual volume. It is apparent that none of them is trying to buy beyond his immediate needs.

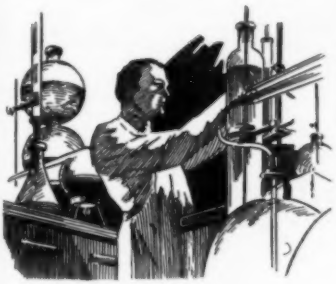
"Pass all of these," instructs Joe. "When scheduling them, give them equal consideration with the larger non-defense orders. We will penalize no one because he is small. We were small once, too."

Then running swiftly through the pile of remaining orders, Joe commented briefly on each.

Pigments

This concern used a nice, clean ivory color on their product, this year. They are lining up their color for 1942. They may as well know now that their choice of color may be limited. It looks now like the only pigments that will be available, in satisfactory quantity, are black, oxide red and a dark earth-yellow. With these it is possible to make an orange with a greenish cast, a passable brown and a very nice olive green. Not a very satisfactory selection, but non-defense users are safer to adopt one of these colors.

The reason for this shortage? Most pigments are derived from some metallic salt. As you know, there is a growing shortage of



all metals. Some pigments too, are produced from organic acids used in munitions.

Synthetic Resins

Orders for synthetic resin finishes will have to be rationed. Most of these resins are a compound of formaldehyde and other ingredients. Formaldehyde plants are now making ammonia and other ingredients for explosives.

One of the very popular resins for industrial finishes is alkyd resin. Whereas the U. S. Navy formerly used paints made on a linseed-oil base, they are now specifying alkyd resin enamels and have purchased immense quantities of them. Another reason for the shortage of alkyd resins is a shortage of phthalate anhydride. This is because dibutyl phthalate is used for coating smokeless powder.

So far, there seems to be no shortage of oleoresinous finishes. Wherever possible, these finishes should be substituted for synthetic resin finishes. A multiplicity of such substitutions may eventually cause some shortage of oleoresinous finishes.

These finishes, as a class, have been greatly improved and are much superior to the oleoresinous finishes of half a dozen years ago. They cure or bake in less time, can be made mar-resistant and they offer hardness, toughness and adhesion comparable with some of the synthetic resin finishes. They do not compare favorably with synthetics for resistance to moisture and acids.

Wrinkle Finishes

Many of the wrinkle finishes are on a synthetic resin base. This means that these wrinkles are hard to get. Oleoresinous-base wrinkles are still available.

For the most part, these wrinkles are duller and finer in texture than the synthetic wrinkles. These features are quite often desirable and for this reason these wrinkles have always found favor with some users. As a result they are easier to spray than synthetic wrinkles. Sometimes they require a longer baking schedule. Most of these materials will skin over in the pail and it is inadvisable to ship them in drums. In pails, this skinning may be prevented by floating a disc of wood or fiber on the surface of the paint.

Crystal Lacquers

One solvent, vital to producing the large design crystal lacquer, is not available. A crystal lacquer having a smaller, less gaudy pattern is available in limited quantity.

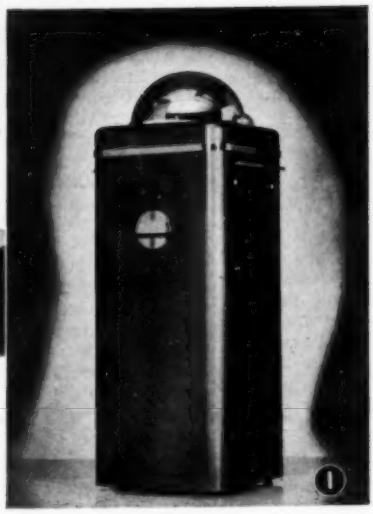
Nitro-Cellulose

Most of the cellulose used in lacquers is from cotton fiber. When it is subjected to a mixture of nitric and sulphuric acid, it becomes nitro-cellulose. Nitrated to a certain degree, it is suitable for use in making lacquer. Nitration in other percentage, makes it suitable for making guncotton. . . .

There is a probability that nitrocellulose will be shipped to the

(Continued on page 73)

Product Design w



BY J. O. REINECKE
Chief Designer for
Barnes & Reinecke

THERE was a time when every barn in the country was painted red. Either apparently or actually the red paints then used were the best for preserving and protecting the wood surfaces against all kinds of weather, and perhaps for identifying those structures as barns. With time, however, there came a variety of colors and improved paints. Today, although the paint still serves as a protective coat, it has a supplementary and just-as-important function — to improve the appearance of the structure or product.

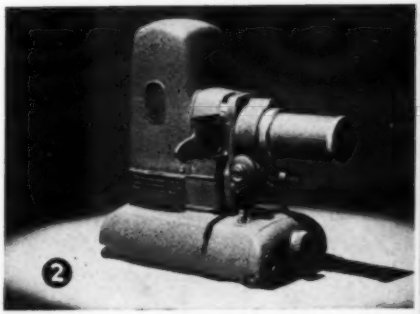
Proper selection of materials and colors is one of the most important steps in industrial design, which is the art of building sales appearance into a product before it goes on the market. Finish is 50% and shape is 50% of physical appearance. Thus the correct finish can make or break the design; it can mean increased or reduced sales for the manufacturer; it can spell success or failure for a product.

Technical problems may partially dictate the selection of a surface coating. However, there is usually a wide choice in what may

...ign with Suitable Finishes

determine whether or not the completed article will have that eye appeal which leads to sales.

Eye appeal does not necessarily mean "flash." The size of the product, its use and the nature of its natural surroundings have a decided bearing upon the brilliance of color that is desirable or permissable. While the most common error in the use of color today is on the side of conservatism, this may be a boon to the consumer's eye, for the improper use of color can be as irritating as its correct use can be pleasing.

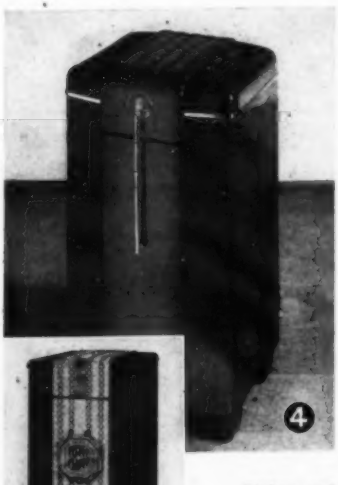


Choice of Color to Produce Desirable Effects

When choosing a color the industrial designer takes many factors into consideration before making a final choice. A large object, he will tell you, usually should be quieter in hue than a smaller one. Whether or not the article is to be used for display purposes, is also a matter of consequence.

Often, through optical illusion, color can make apparent changes that are not physically possible. That light-colored objects appear larger than dark-colored ones has long been known by the world's famous painters. Interior decorators early learned that red or a "hot color" is more prominent or "advancing", whereas blue or a "cold" hue is receding. Shrewd dressmakers throughout the ages have taken cognizance of the fact that stripes or patterns may apparently change the wearer's proportion considerably.

These same principles and many others, the industrial consultant



Before and after views of a stove redesigned and given a new finish.

applies in his designing of stoves, washing machines, refrigerators, factory machinery and various gadgets for the home and office. Like all other artists too, he knows the extreme importance of the psychological effects of color; but in general, association with natural or commonplace objects can be used as a rough guide. Harmony and contrast involving proportional size as well as hue, tint and shade require experienced and able handling.

The Effect of Texture in Decorative Colors

Texture can alter the appearance of colors due to light and shadow. Smooth highly polished surfaces are usually preferred since they are tacitly pleasant, easily cleaned and they make the most of highlights. In many instances, however, economical finishing dictates wrinkle finishes or rough coatings. From the designer's standpoint, these finishes are sometimes difficult to use, since it may be impossible to contrast them with a polished trim—and a large rough surface can be very "dead" in appearance.

A few of the several protective and decorative finishing problems recently solved by Barnes & Reinecke, Chicago industrial designers, are briefly described and illustrated in this article. Incidentally, more than $300,000,000 worth of products of this company's design are sold annually.

1. When the Shelton permanent waving machine (illustrated at the beginning of this article) was changed from a chrome-plated metal housing on a tubular stand to a sheet-metal cabinet, it was necessary to select new finishes almost throughout.

The spherical control panel, which is revolved for opening and closing was finished in chromium. The cabinet of the machine, formed of sheet metal, was finished in gray hammerloid, with accents of chrome on the molding and handles. Finally, to add a last distinctive touch, Barnes & Reinecke applied a colored nameplate to the face. Look at the illustrations and notice the contrast between the old and new models (No. 1).

2. A metallic dark gray wrinkle finish was used on the Bell and Howell projector (illustration No. 2) to cover imperfections in the casting and to withstand high heats. The area of the product was small enough to prevent monotony; and dullness in appearance. The non-reflective surface, while it has some disadvantages, is prac-

tical in that it does not cause disturbing reflections while in use. Chromium-plated fittings and a red nameplate furnish the necessary contrast.

3. The original Heyer duplicator was made of sheet metal, grained to imitate figured wood. On the new model, the elimination of visible screws and an improvement of the shape dictated the use of a casting. A bronze brown wrinkle finish concealed defects in the material and contrasted well with the polished raised surfaces; see illustration No. 3 which shows the "before" and "after" models. The supporting shell extends to the floor where the base is set back from the perpendicular sides.

4. The body of the old Cole's hot-blast stove, before re-design by Barnes & Reinecke, was a very deep brown with a tan center panel. On the new model the outer panel is changed to chocolate brown, and the center panel was made slighly lighter in shade. The edges of the center panel were air-brushed with chocolate brown to blend all panels together.

This new color scheme harmonizes with the average home interior, yet at the same time it has more life for display purposes. An additional spot of color was added — the red-enameled nameplate. Contrast was provided by chromium molding and handles.

5. The Miller hydro bottle-washer is usually prominently displayed, where it is installed. Barnes & Reinecke ascertained this fact before proceeding with this job. A base of brilliant red therefore was considered not too gaudy for a product of this size—approximately 8x30-ft. The illustration, No. 5, shows a miniature model. White for cleanliness and sanitary effect is used for the main body (a psychological application of color) and stainless steel is used for trim. The agitated washing fluid is flood-lighted with bluish white light. All surfaces are highly-finished smooth enamels.

6. Both old and new cases of the Motorola radio are of drawn sheet metal. The former model had a wrinkle finish to conceal blemishes in the metal caused by spot welding. In order to overcome these blemishes, yet have a different looking, smooth finish on the new model, hammerloid was specified. Throughout the entire line, colors for the hammerloid and chrome flock grill were selected for dispay value and harmony.

In this matter Barnes & Reinecke have coped with many industrial design problems which have entered their offices. Incidentally,

Model of newly designed hydro bottle-washer in white, stainless steel and brilliant red.

in solving these problems, the company has won 12 plastic awards for excellence of design.

Limitations imposed by defense needs now require even more than usual care in preparing specifications, yet, at the same time, the company believes that these necessary changes are pushing certain products out of the time-worn ruts.

Frolics in The Finishing Room—7

THIS incident happened in a refrigerator factory many years ago. Certain ice chests were finished with an orange-tinted lead base as a first coat; then a stippling job was done over this base color, giving the chests the appearance of having been grained. The stipple graining color was made by mixing dry powders with stale beer, which was delivered to the finishing room in half-barrel lots. It was drawn from the container through a wooden faucet, as needed.

One day the foreman called the stock room for delivery of a keg of stale beer. It so happened that they were completely out and had to send to the brewery to get a keg of good beer in order to "get by" for the time being.

When the keg of beer arrived from the brewery the stock room men were busy, so the foreman sent two of his finishers to the stock room to get it. However, they knew it was a keg of good beer so they took it to one of the warehouses near by and proceeded to enjoy part of its contents. After more than a hour had passed and the men did not show up, the foreman decided that something had happened. Accordingly, he started out in search of them. When he found

them they were in no condition to do any work in the finishing room, so he sent them home. Naturally, this resulted in a loss of both time and material, so no more kegs of good beer were delivered to that plant for use in production.—F. W. WORTH.

Editor's Note: Stories of other funny happenings in the finishing room will be welcome.

Book On Coal-Tar Solvents

A new book of 40 pages 6x9-in., bound and lettered in two tones of blue, has been compiled and published on the subject of Coal-Tar Salvents by The Neville Co., 1938 NevilleIsland Post Office, Pittsburgh, Penna. Readers of INDUSTRIAL FINISHING can obtain copies of this informative reference book by writing their request on their company's business stationery.

New and Improved Solvents

A bulletin from the American Mineral Spirits Co., 230 N. Michigan Ave., Chicago, Ill., states that, "in keeping pace with changing conditions involving revisions in the use of solvents for industrial processes, we have made certain improvements in Amsco-Solv aromatic solvents. We are also introducing Amsco-Solv F, a new product of high aromaticity, specifically designed for use when a closely fractionated high-boiling solvent is dessirable. Amsco-Solv aromatic solvents are now available in six widely divergent evaporating ranges. The use of these solvents, either singly or in combinations, will permit the meeting of most specific use requirements."

How Material Scarcity

MAY AFFECT NEW FURNITURE FINISHING

Technical Director of finish manufacturing firm presents a quick, brief and timely survey of the material situation as it now affects or may soon affect furniture manufacturers and other users of materials for finishing products made of wood.

BY ROLLIN H. WAMPLER

DUE TO shortages created by the demands of the defense program, severe dislocations are appearing in the supplies of some raw materials used by the paint and varnish industry. Furniture manufacturers are finding that their suppliers can no longer furnish them with unlimited quantities of such things as synthetic finishes, lacquers, shellac, and non-aqueous or non-grain-raising stains. In some cases they have been notified that certain such materials are no longer available except on a defense priority basis.

Producers of finishing materials are scouring the markets for all available unattached raw materials. *There just simply isn't enough of everything to go around, and the indications are that the situation will become much worse. This means that furniture manufacturers may be forced to turn to other more available materials.*

A case in point is non-grain-raising stains. Methanol is practically impossible to obtain for non-defense purposes; also other special solvents used in these stains. Of course, the finisher can always dissolve his aniline stain powders in hot water, as many have done all along.

Wood Stains and Fillers

Water stains will raise the grain of the wood, making it necessary to wash coat and sand the surface before filling. But aniline colors are already high in price and may go higher. Modern types of pigment stains can be used in some cases to help relieve the situation.

Another approach to the stain problem is through the use of fillers that have a staining effect on the wood. For light colors this method is especially applicable.

Transparent permanent pigment shading stains are already on the market and have found wide use even in normal times.

At the moment, raw materials for fillers and glazing stains seem plentiful. No shortages are anticipated in these materials.

Wash Coats; Sealer Coats

Pure white shellac reduced with alcohol, and shellac and lacquer reducer have been universally used as wash coats. Now shellac is high

in price, alcohol is almost impossible to obtain, and lacquer products are becoming scarcer every day. Special wash-coat sealers compounded with materials readily obtainable have been developed for this purpose. Some may even be tinted with aniline colors so as to produce a staining effect.

Lacquer sealer has been widely used as a sealing and building coat, as well as smaller quantities of lacquer sealer reduced with shellac substitutes. Quick-drying varnish sealers are available. Modern pigment primers are being developed. Special building coats of many types are being experimented with in an effort to replace lacquer sealers. One of the most serious problems is that of quick drying for conveyorized finishing.

Lacquers; Synthetics; Varnishes

Lacquers and synthetic finishes for final coats are strictly rationed. For the moment varnishes made with synthetic resins are available in necessary quantities. However, it may be necessary to go to old-type fossil-gum varnishes. Made with the newer types of drying oils, very acceptable finishes are produced at some sacrifice in drying speed. Conveyorized finishing schedules may have to be altered so as to allow such finishes to dry overnight before they can be rubbed and crated. A drying room operated overnight at elevated temperatures will guarantee complete success with such finishes, although they will air-dry satisfactorily overnight.

As with transparent finishes, lacquer and synthetic undercoats and enamels may have to be replaced with oil and varnish types at a sacrifice in drying speed.

Some of the toughest problems come in with respect to special high-integrity finishes, such as those used on school and laboratory furniture and at places where great resistance to chemicals is required. Pure phenolic varnishes may become unobtainable. The supply of special finishes based on rubber may dwindle. Some sacrifice in resistance to certain reagents may have to be made until the emergency is over.

Substitutes of Good Quality

One of the most surprising things about the whole situation is the fact that substitute finishes sometimes have higher quality than the originals. Many times new characteristics of great value appear. The producers of finishing materials are working constantly to develop materials to replace scarce ones. The more progressive firms are also continuing research as before, to the end that after the emergency is over, finishing materials may be better than ever. Probably many materials used as substitutes today will remain in use when other materials are plentiful because of their special characteristics.

Time for Consumers to Think and Act

In conclusion, let it be said that this article is not meant to be a prophecy; nor is it meant to unduly alarm consumers of finishing materials for non-defense purposes. Certainly the government cannot permit all non-defense manufacturing to stop. *But it is high time that such consumers should put some thought on the matter and be on the alert for acceptable alternate materials.*

It may be that shortages now anticipated may never develop. Also, it may be that materials which are plentiful today will be scarce tomorrow. Consumers of industrial

WAY BACK WHEN "MOM" WAS A GIRL...

Bath tubs were scarce as hen's teeth ... gas illuminated the better homes ... horses hauled collar-box street cars through the streets on tiny rails ... and we were a young outfit struggling to make finishing materials.

The materials we made in those early days were as good as we knew how to make them. They are better in quality today because we have learned through the years and because we still stick to that original idea of making the best we know how to produce.

For those who would like suggestions on protective and sales stimulating finishing schemes, for wood and metal products, we offer the facilities of our Creative Studio. This service is given to reputable firms without cost or obligation.

ROCKFORD VARNISH COMPANY

Manufacturers of Finishing Materials

ROCKFORD • ILLINOIS

NO TAMPERING WITH QUALITY

finishes can help materially by refusing to hoard such materials, and by purchasing no more than their immediate requirements. They can take comfort in the fact that their suppliers have a wide variety of raw materials to choose from, not all of which will become scarce or unobtainable. To keep alert to the situation by collaberating closely with their regular suppliers is the best approach to the problem.

Blast-Cleaning Metal Parts

THE SPEED with which metal parts, such as castings, forgings, stampings, etc., can be cleaned in an airless blast-cleaning machine, such as the American Wheelabrator Tumblast, using metallic abrasive, is so much faster than was formerly possible with sandblast methods that wasteful overblasting becomes a strong possibility unless the cleaning period is timed.

With production going at full speed, as it is today in nearly all metal industries, a few minutes unnecessarily wasted on each load of work being cleaned can run up to an amazing figure, even over a short period of time.

The most efficient method of keeping tab on the time the work is being blasted is a time signal horn which automatically sounds at the end of the predetermined cleaning period. A small dial on the front of the device makes possible setting the timing clock to any desired number of minutes.

When the determined cleaning time is reached the horn sounds, warning the operator of the blasting machine to unload the cleaned work. If the machine is equipped with a loader, the operator will have filled it during the cleaning period so that it can be emptied into the cleaning chamber immediately after the preceding load has been discharged. Otherwise the operator will throw a new charge into the machine and then set the timer to indicate the time needed to clean that particular load.

Thus the blasting equipment is in operation only long enough to allow adequate cleaning, and the operator is released from constant attention around the machine and too frequent inspection of the load. —A. F. E. Co.

Free Bulletin on Portable Sanding and Rubbing Machines

An illustrated bulletin of six pages, 8½x11-in. shows and describes Sundstrand portable sanding and rubbing machines in productive use in many different industries. Such operations as sanding wood in the white, sanding wash coats, sealer coats, under coats, etc., are included. Also, the sanding of bare and coated metal to produce smooth surfaces. The rubbing of varnish, lacquer and enamel coats to remove excessive gloss and produce a satin-like finish is described and illustrated. The bulletin is attractively printed in black on white, with decorative blackground effects in two tones of brown. Send for a copy for present and future reference.

Ruth Hammond Succeeds Rosalie Flank at Furniture Mart

New publicity director and advertising manager for the American Furniture Mart, Chicago, Ill., is Ruth Hammond, it has been announced by Lawrence H. Whiting, president.

No newcomer to the industry, Miss Hammond has been a member of the Mart's staff for five years and is familiar with the furniture and home furnishings business. She has held various positions in the Mart's executive offices. Early this year she was named assistant to Rosalie Flank, then publicity director and advertising manager, and since Mrs. Flank's retirement August 1, she has been in charge of that department.

Recently appointed as Miss Hammond's assistant is Ruth Dimmich, formerly of Lafayette, Ind.

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MODERN PRODUCTION FINISHES

How to Properly

BY H. W. CHESTER
Foreman Finisher

A PIECE OF furniture is not really finished completely until the exposed surfaces have been rubbed properly. Rubbing is certainly a vital part of any good finishing job on furniture. Occasionally we see an attractively designed, skillfully built, finished piece of furniture that has had its appearance spoiled by a poor rubbing job, or we see a type of rubbing that is not in keeping with the design.

Some manufacturers give too little attention to the importance of a suitable rubbing job on their furniture. They hesitate to spend enough money to get the right type and quality of rubbing job, and as a result, their merchandise has a cheapened appearance. This shows up especially when it is compared to furniture that has been properly rubbed. It doesn't attract nor favorably impress buyers of quality goods who are willing to pay satisfactory prices for what pleases them. Instead, it becomes the prey of price buyers.

A Borax or Borax Modern suite should never be dull rubbed. An 18th Century suite should never have a highly polished finish. The Borax and Borax Modern suites, if they are finished in varnish, can be rubbed down to a smooth surface. First, I would suggest using 4F pumice and paraffin oil, or wet sanding with No. 400 wet-or-dry sandpaper or rubbing with tripoli polishing powder. If No. 400 sandpaper is used, it should be followed with No. 4F pumice and oil to remove sandpaper scratches.

Applying Rubbing Compound

Any of these materials can be rubbed with an air-driven or electric driven reciprocating-pad portable rubbing machine. We use an air-operated type of rubbing machine and we find these machines do a satisfactory job. They also save us a lot in labor, as one man and one machine will do as much work as three or four men by the old method of hand rubbing.

Either oil or water can be used as a lubricant. Most of these machines have a rubber hose attachment which, by pressure of a button, automatically supplies the necessary lubrication for the operation.

Most of the workmen I have seen prefer to use an ordinary shoehandle brush for applying the oil or water to the surfaces being rubbed. Only enough oil or water should be added for lubrication;

Rub Furniture

Photographs, by courtesy of Sundstrand Machine Tool Co.

too much will cause the machine to throw it off, thus wasting the pumice or polishing power.

Some operators mix their oil and pumice or oil and tripoli powder to form a slush which they pour or splatter on the surface to be rubbed. After the flat surfaces of a piece of furniture have been rubbed down to a very smooth surface, all posts and framework should be rubbed with a soft piece of burlap or fine No. 4/0 steelwool, using oil and pumice. All carvings should be brushed with a shoe-handle brush, dipping the brush first in oil and then in pumice.

Polishing After Rubbing

After rubbing with pumice, sandpaper or tripoli polishing powder, all surface should be wiped with soft cotton waste or cheesecloth. All crevices should be blown clean with an air gun duster to remove small accumulations of pumice and oil. This is then followed by polishing to a high luster with a lambs-wool buffing wheel, using a special buffing compound.

All moldings and carvings are hand polished with a pad made of cheesecloth or soft cotton waste. A good oil-free furniture polish containing a fine grade of abrasive should be used. First, dip the pad into the polish and then apply the wet pad to the piece, using first a circular motion and then polishing straight with the grain. The surface is then wiped clean with cheesecloth or soft cotton waste. If this method is used, a very high polish will be obtained.

If the goods to be rubbed are finished in lacquer or synthetic top coats, it is best to first use No. 400 sandpaper to make the surface smooth, as sandpaper cuts much faster than either pumice stone or tripoli. It is more economical because of the hardness of lacquer and synthetic finishes.

18th Century Furniture Always Dull Rubbed

Much of the 18th Century furniture is finished in flat lacquer or flat synthetics. However, some manufacturers use varnish as a final coat. This is especially true in the cheaper grades of this type of furniture. The 18th Century type of furniture should always have a dull satin-rubbed finish. This effect is obtained by rubbing the finish down to a smooth surface with oil and 3F pumice or No. 400 wet-or-dry sandpaper, using the same method as described previously.

Some finishers color their rubbing oil to a dark brown color, using asphaltum stain or some other dark brown oil stain. Then, if any small amounts of pumice stone remain in the crevices of carvings, after the usual blowing out with an air gun, they will not show white or gray later.

After a piece of furniture has been machine-rubbed, all small parts and frame work should be rubbed with oil and pumice, using a small pad made from burlap or No. 5/0 steelwool. All moldings and carvings should be brushed with a stiff shoe-handle type of brush. The remaining oil and pumice is then wiped off with soft cotton waste. Accumulations of rubbing material in cracks and crevices are blown out with an air-gun duster.

For production rubbing on table tops and large flat surfaces we have a large power-driven rubbing machine — a stationary machine with adjustable stroke—which does excellent work. The rubbing pads of this machine are generally covered with cheesecloth or soft cotton waste.

A non-abrasive cleaning polish is then applied with a soft pad made of cheesecloth or soft cotton waste. A good cleaning polish of this type is important, so as to eliminate or prevent any trace of "haze" or "bloom" on the dull-rubbed finish.

Finally, the workman wipes off the excess polish from the surfaces, using a soft cheesecloth and wiping with the grain. If this method of rubbing and polishing is used, a beautiful dull satin finish will be obtained.

On some of the 18th Century and other suites, and especially on limed oak and open-grained suites that are finished in flat lacquers, it is customary to rub them down to a smooth surface with No. 4/0 or finer steelwool. Then we apply a thin coat of liquid or paste wax. The workman uses a soft cheesecloth pad to apply the wax. He allows the wax to dry from two to five minutes; then wipes all surplus wax from the surface with a soft cheesecloth. He blows away

Typical "shoe-handle" brush.

all cheesecloth lint from the surface with an air-gun duster. This method gives you a very dull and very durable finish.

Note: Some labor can be saved by first dipping steelwool in the wax and then using this to cut down the surface; then wipe the surface clean with cheesecloth. While the steelwool and wax together will not cut as rapidly as steelwool by itself, the use of steelwool and wax together eliminates the operation of putting the wax on after the case has been rubbed down with steelwool.

Most all oak furniture, regardless of design, requires a dull finish. This finish is best obtained by using steelwool and wax. Use the same methods that have been outlined in preceding paragraphs.

Due to greatly accelerated business conditions and the big demand for furniture, some manufacturers, in order to cut down labor costs, shorten finishing schedules and thus hasten the shipping date, are not rubbing their furniture as well as they did formerly. However, the better grades of furniture still need and always will require a good rubbing job—and I am sure that some of the cheaper suites would bring better prices if they were properly rubbed.

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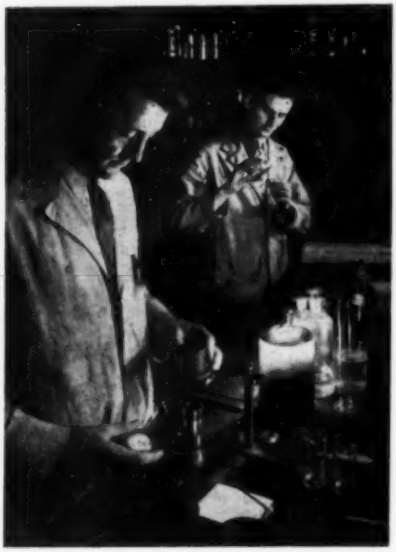

Organic Solvents

BY WILLARD SEEMAN

ORGANIC solvents, such as are employed in organic finishing materials, have been defined as volatile fluid-organic compounds by means of which solid or semi-solid organic materials (resins, oils, plasticizers, etc.) may be converted, without chemical change, into useful solutions. It is the purpose of this discussion to present information on these organic solvents with the particular object of acquainting the users of enamels, varnishes, lacquers and other finishing materials with data on solvent types, classifications, characteristics, etc.

Classification by Boiling Points

One of the earliest attempts at classification of organic solvents was on the basis of boiling points. Solvents, regardless of type, solvent power, etc., were somewhat arbitrarily grouped as low, medium or high boilers. In the lower-boiling classification were placed those solvents whose boiling points were below 212° F. The medium boiling solvents were those whose boiling points were near 257° F. (or more exactly those from 212° F. to 302° F.) Solvents whose boiling points were above 302° F. were classed as high boilers.

The boiling points given in Table I are, of course, for the pure compounds. In actual practice organic solvents are rarely pure. They usually contain greater or lesser amounts of impurities and consequently have no sharp boiling point but, rather, exhibit a range of temperatures through which they distill. For example, one commercial grade of normal butyl al-

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Berry Brothers industrial customers know the value of prompt, practical re-formulation work, made necessary by finishing materials shortages — *because they're getting this kind of help from Berry Brothers laboratories every day!*

Months ago, Berry Brothers research laboratories began anticipating probable shortages, both in lacquer and synthetic enamel materials, and were ready when shortages developed. As a result, today, Berry Brothers customers are operating without any serious material shortages and with no burdensome expansion in equipment.

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Low Boiling Solvents	
Ethyl ether	(degrees F.) 94
Acetone	134
Methyl acetate	135
Methyl alcohol	148
Ethyl acetate	171
Methyl ethyl ketone	175
Benzene	176
Propyl (iso) alcohol	180
Propyl (iso) acetate	192
Propyl (normal) alcohol	208
Butyl (sec.) alcohol	211
Ethyl propionate	210
Medium Boiling Solvents	
Dioxan	(degrees F.) 215
Propyl (normal) acetate	215
Butyl (iso) alcohol	223
Toluene	231
Butyl (sec.) acetate	233
Butyl (iso) acetate	242
Diethyl carbonate	258
Butyl (normal) acetate	260
Xylene (o)	291
High Boiling Solvents	
Ethyl lactate	(degrees F.) 311
Diacetone alcohol	327
Benzyl alcohol	401
Benzyl acetate	416

Table I — Organic solvents arranged according to their boiling points.

cohol is described as having a boiling range of 239° to 244° F., whereas the pure compound boils sharply at 244° F. Such boiling range data is valuable in determining the purity of solvents, a wide boiling range indicating the presence of impurities.

Classified by Evaporation Rates

While the boiling point (or range) of a solvent is of some interest, particularly for checking purity, knowledge of the evaporation rate is more important and useful, since the rate at which the solvents in a finishing material are lost determine its flow, leveling properties, etc., to an appreciable extent. At first glance it would appear that predictions of evaporation rates could be made on the basis of boiling points. Unfortunately, this is not so. For example, the boiling point of methyl alcohol is lower than that of ethyl acetate and yet the latter shows a greater evaporation rate than the forme-

Because of the variables involved, the determination of evaporation rates is not as exact as the determination of boiling points. As a matter of fact, results on the same solvent may vary between different laboratories, between different operators and, indeed, may vary from day to day with the same operator using the same equipment. Therefore, evaporation rates are

Fast-Evaporating Solvents	
Ethyl ether	1
Acetone	2.1
Methyl acetate	2.2
Ethyl acetate	2.9
Benzene	3
Propyl (iso) acetate	4.2
Ethyl propionate	5.5
Toluene	6.1
Propyl (normal) acetate	6.1
Methyl alcohol	6.3
Methyl ethyl ketone	6.3
Medium-Evaporating Solvents	
Dioxan	7.3
Butyl (iso) acetate	7.7
Propyl (normal) alcohol	11.1
Butyl (normal) acetate	11.8
Butyl (sec.) acetate	12
Xylene (o)	13.5
Diethyl carbonate	14
Butyl (sec.) alcohol	20
Propyl (iso) alcohol	21
Butyl (iso) alcohol	24
Butyl (normal) alcohol	33
Slow-Evaporating Solvents	
Ethyl lactate	80
Diacetone alcohol	147
Benzyl acetate	393
Benzyl alcohol	1767

Table II—Solvents classified according to their rate of evaporation.

not usually expressed in absolute units such as weight or volume evaporated per unit time. They are generally expressed relative to the evaporation rate of some solvent selected as a standard.

A number of solvents have been used as standards, including ethyl ether, ethyl acetate, etc. In Table II, I am listing one classification of solvents based on ethyl ether whose evaporation rate is arbitrarily given the value of 1.0. Solvents that evaporate up to seven times more

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slowly than ethyl ether are grouped as "fast-evaporating solvents." Those that evaporate seven to 35 times more slowly than ethyl ether are classed as "medium-evaporating solvents," and those that evaporate more than 35 times as slowly are classed as "slow-evaporating solvents."

Classification According to Chemical Composition

One of the best methods of classifying solvents is by chemical composition. True, such a classification does not give specific data on physical and chemical properties for individual solvents. However, general characteristics may be described for each class and valuable information may thus be obtained, particularly since solvents in any one class usually exhibit a regular change in properties as the molecular weight increases.

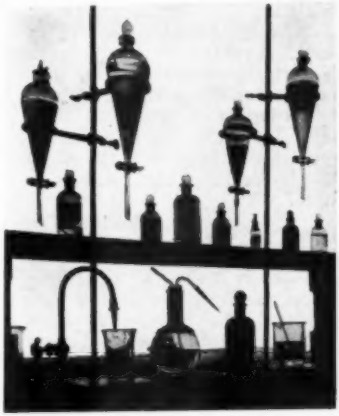
The following are some of the more important types of volatile solvents used in the formulation of organic finishing materials.

Alcohols

Alcohols possess the general structural formula *R-OH*, where *R* represents a group of carbon and hydrogen atoms.

Alcohols are made by a number of processes. For example, methyl alcohol may be obtained from the destructive distillation of wood and also by a catalysed reaction between hydrogen and carbon monoxide. Ethyl alcohol and normal butyl alcohol may be obtained by fermentation processes. Isopropyl, secondary butyl and tertiary butyl alcohols can be manufactured from natural gas and petroleum.

Alcohols which may be found in organic finishing materials include. methyl alcohol (methanol), ethyl alcohol (ethanol), isopropyl alcohol



(isopropanol), normal propyl alcohol (n-propanol), secondary butyl alcohol (sec-butanol), isobutyl alcohol (isobutanol), normal butyl alcohol (n-butanol), secondary amyl alcohol, methyl amyl alcohol (methyl isobutyl carbinol), hexyl alcohol (2-ethyl butyl alcohol), octyl alcohol (2-ethyl hexyl alcohol), cyclohexanol, benzyl alcohol.

Esters

Esters possess the general structure $R\text{-}COO\text{-}R^1$ where R and R^1 may be the same or different combinations of carbon and hydrogen atoms, except in the esters of formic acid (formates) where R^1 represents a single hydrogen atom.

Esters may be prepared by the reaction between an alcohol and an acid; for example, ethyl acetate is made from ethyl alcohol and acetic acid. They may also be made by the action of an acid chloride on alcohol, the action of an acid anhydride on an alcohol, or the action of an alkyl halide on the silver salt of an acid.

Among those esters which may find use in organic finishing mate-

rials and thinners are: methyl acetate, ethyl acetate, isopropyl acetate, ethyl propionate, sec-butyl acetate, iso-butyl acetate, n-butyl acetate, sec-amyl acetate, hexyl (2-ethyl butyl) acetate, octyl (2-ethyl butyl) acetate, octyl (2-ethyl hexyl) acetate, diethyl carbonate, cellosolve acetate, butyl cellosolve acetate.

Ketones

The structural arrangement of ketones is $R\text{-}CO\text{-}R^1$. They may be prepared by the oxidation or dehydrogenation of alcohol and also from acids, dihalides and nitriles. Acetone, or dimethyl ketone, is one of the products of the fermentation process used to obtain butyl alcohol.

The following ketones find use in the formulation of organic finishing materials: acetone (dimethyl ketone), methyl ethyl ketone, diethyl ketone, methyl propyl ketone, hexone (methyl isobutyl ketone), dipropyl ketone (butyrone), cyclohexanone.

Alcohol-ethers

Alcohol-ethers are two type solvents, that is, a single molecule possesses characteristics of both an ether and an alcohol. A monoether alcohol has the structure $R\text{-}O\text{-}R\text{-}OH$, a diether alcohol, $R\text{-}O\text{-}R^1\text{-}O\text{-}R^1\text{-}OH$, etc.

Alcohol-ethers are prepared by the combination of ethylene oxide and an alcohol. Methyl cellosolve, for example, is made from ethylene oxide and methyl alcohol.

The following list comprises some of the alcohol-ethers which may be utilized in lacquers, enamels, etc.: methyl cellosolve (ethylene glycol monomethyl ether), cellosolve (ethylene blycol monoethyl ether), butyl cellosolve (ethylene glycol monobutyl ether), methyl carbitol (diethylene glycol monomethyl ether), carbitol (diethylene glycol monoethyl ether), butyl carbital (diethylene glycol monobutyl ether).

Hydrocarbons

The hyrocarbon solvents—organic compounds consisting of hydrogen and carbon only—fall into three main groups: the coal-tar hydrocarbons, the naphthalene hydrocarbons, and the petroleum hydrocarbons. Important coal-tar solvents are benzene, toluene and the xylenes. Tetrahydronaphthalene (tetralin) and decahydronaphthalene (decalin) are useful naphthalene solvents. Finally, the petroleum hydrocarbons include hi-flash naphtha, petroleum naphtha, V.M. & P. naphtha, mineral spirits and a number of others offered under various trade names.

Note — For specific information on individual solvents it is suggested that a reference text book be consulted. Manufacturers or producers of the individual solvents can also supply information.

New Manual on Near-Infra Red Ready for Distribution

A new manual on the Near Infra-red Process, covering applications in the industrial, printing and motor-baking fields, has just been published by The Fostoria Pressed Steel Corp., Fostoria, Ohio, and is available to all persons who request it on their company stationery. Ask for PS-29.

This 16-page presentation is illustrated with pictures of various applications and equipment to operate the process. It describes in detail what radiant energy is and how it works.

At least 100 large companies working on Defense Production today are using Fostoria Equipment to speed Baking, Drying, Preheating and Dehydrating problems in their plants.

Persons requesting this manual will find the answers to why these many Defense manufacturers have turned to the Near Infra-red Process to solve the many "bottlenecks" in their manufacturing problems.

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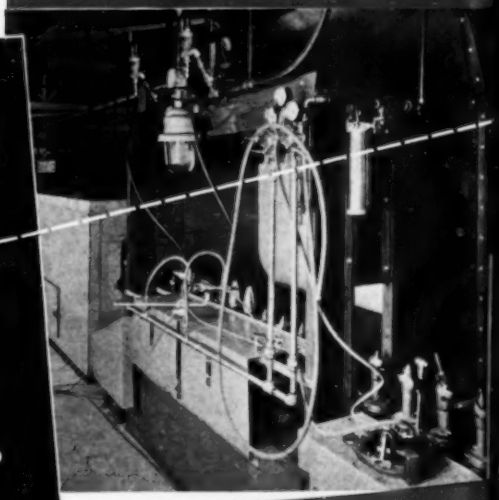

and what it means to

In a certain large shell loading plant of the U. S. Government Ordnance Department, BINKS Automatic Spray Finishing Equipment is coating the outside of shells in sizes ranging from 20 mm. to 105 mm. at the rate of 1000 an hour. The entire installation consists of 23 different automatic units.

HERE'S HOW IT'S DONE: The ingenious machine that attains this speed is the brain child of BINKS Engineers in collaboration with Army Engineers and the Government Contractor responsible for the operation of the plant.

The shell parts to be finished are placed manually on spindles which are mounted on a long conveyor chain. Simple masking rings and plugs are used to protect threads from becoming coated in the finishing process. The spindles with their loads first pass through a preheating oven which conditions the shells for finishing by removing all traces of moisture. From this oven the spindles carry the shells directly into a BINKS Dynaprecipitor Water Wash Spray Booth. Here the spindles

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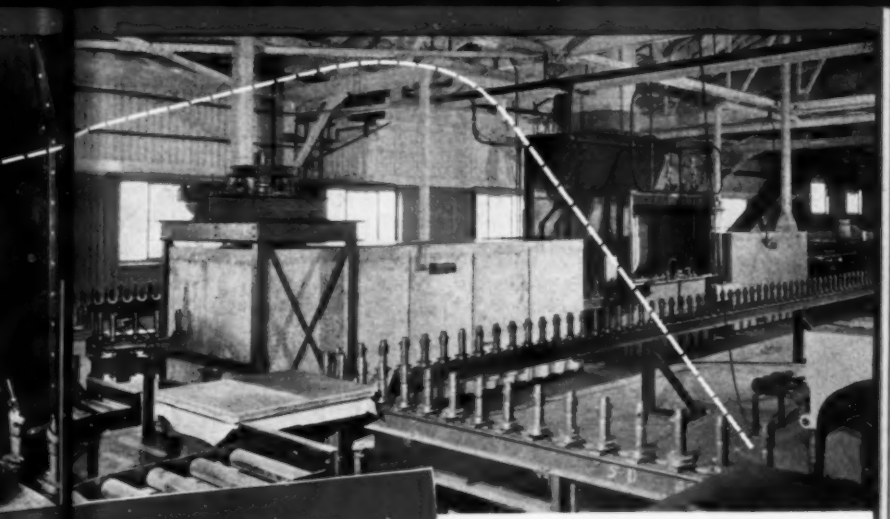

ns to You!

Over-all view showing BINKS equipment used to automatically finish 1000 shells an hour.

begin to spin rapidly and as each one comes in front of the automatic spray guns the shell on it receives a fine, even coating. To avoid waste the guns only operate when a loaded spindle is in front of them. The freshly coated shell is next carried into a BINKS drying oven from which it emerges about four minutes later completely dry and ready for immediate handling. In this way a shell is completely coated and dried every 3.6 seconds.

WHAT THIS MEANS TO YOU: Even if you are never called upon to finish shells or other munitions of this type, the installation just described means better and faster finishing for you. The same BINKS engineers who worked out the details of this installation are at your service to help you solve your particular problems. They have licked some of the toughest finishing problems in the world. Their experience is at your command no matter how big or small your problem, or what your product is. They will be glad to give you their suggestions without obligation.

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I have been a constant reader of this magazine for many years. Have enjoyed it and learned a good deal from the many articles written, so I have decided to write one of my own, along the lines of my profession.

I have held foreman positions in some of the largest furniture factories in Grand Rapids, and I spent nine years with a company in Massachusetts before taking my present position as service-man. I could tell a good deal about my experiences in various factories if space permitted. It is a tough job but an interesting one.

If this article is worth while, perhaps I can write one in regard to the value of a combined service-man and salesman.—THE AUTHOR.

Dr. of Finishing Ills— The Service-Man

BY W. C. ANDERSON

WHEN a big league baseball manager sends his team on the field, eight players take their positions with the utmost confidence in their pitcher to win. Through years of experience the baseball pitcher has developed control and, since every opposing batter has a weakness, he pitches the ball to this particular spot. Without this skill he is just another guy named Joe.

In this category are placed the service-men, representing the manufacturers of wood-finishing materials.

In the old days finishing foremen were skilled artisans. They had different colors in water dyes, oil stains and a few other materials to formulate the desired colors of that era. The day's work was taken in stride. Piece-work was unknown. Shellac and varnishes were the final coatings. Every man had plenty of time to do his work well, as speed was an unknown factor.

The foreman was the boss upstairs and as long as he satisfied the owner and designer, no one bothered him. Ways of learning the finishing game were varied for many of those old timers—for example, such as taking different stain powders home at night and mixing different dyes to see what color combinations could be derived. This was jotted down in a book—and by being observing in the factory, other phases of finishing were learned.

During the intervening years. speed has become the main factor. Piece-work, bonus systems and the conveyor of today have followed in order. In the various operations,

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PRODUCTION...

and the man who picked things up!

THINGS were quite a mess when they called in the Du Pont man. Their production had dropped 10 days behind. The finishing department was the bottleneck. Their trouble was "bridging" in the spraying of carved or fluted furniture. Because the lacquer wouldn't spread properly, it didn't follow the lines of the surface, but formed angled "bridges" or gaps with air pockets beneath the film.

The Du Pont man looked things over and found the finish was being sprayed too cold. At his suggestion, the lacquer was brought up to room temperature. There was no more "bridging." Production picked up right away! Now this problem sounds simple. Yet it cost the firm several thousand dollars in business. And the Du Pont man—because of his many years of experience—knew what to look for, so he was able to give the answer quickly.

For problems like this—and tougher ones, too—he also has behind him many other skilled Du Pont specialists—research chemists, laboratory technicians, production men, service engineers, field representatives—all with the finest of facilities for developing, making and applying better finishes.

That's why so many manufacturers have come to look upon Du Pont as part of their own paint department. They know that when they run into finishing problems, Du Pont will be ready, willing and able to supply the answer.

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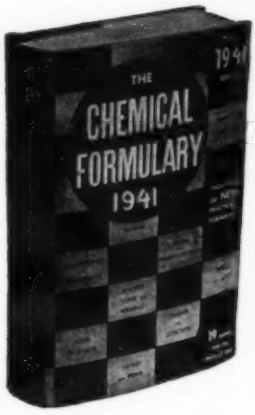

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INDUSTRIAL FINISHING *Magazine*

1142 North Meridian Street **Indianapolis, Ind.**

men become proficient in one operation and do not have the opportunity nor desire to learn other phases of finishing. Too few have the stamina or courage to attend the many night schools where the fundamentals of wood finishing are taught.

Formulated Stains Supplied; Service-Men On Call

Manufacturers of wood-finishing materials surmised this situation some years ago and began formulating combined dyes for water stains and non-grain-raising stains in any color desired by the furniture manufacturer. The finisher, therefore, is not obliged to take time and mix separate dyes of concentrates for certain shades. These are mixed in the laboratories, and color panels are submitted to the manufacturer for his approval. The finisher receives instructions to use so many ounces to the gallon of water, or the non-grain-raising stains are sent ready to spray.

The old-time finisher generally had a son or some one in his employ in whom he confided and taught the tricks of the trade.

Today it is the service-man who serves as the vitally important link between the user and manufacturer of wood-finishing materials. He is the balance wheel between the technical staff and the finishing room. When the formulators develop new materials that work perfectly in the laboratory, these materials must also be made to work satisfactorily in the factory. The service-man applies them and watches for flaws which, if such develop, are reported back to the laboratory and corrections are made.

The service-man is always on the alert. He must know the different periods, veneers and solid woods. He contacts buyers of large department stores, goes into a huddle with designers who have old antiques or panels to copy for certain colors.

America today is color conscious. Any housewife can go to a modern retail store and sit down in luxurious rooms spaced off to resemble a home. She is surrounded by every color in the rainbow—developed in rugs, curtains, shades, drapes, wallpaper, dishes, upholstering fabrics and knick-knacks of all kinds. It is the service-man who develops tints and shades for furniture to fit into this picture.

Typical Problem; What the Service-Man Discovered

Problems in the finishing room are many and varied. Here is one: A manufacturer complained to a salesman that the finish was not satisfactory. The representative called his firm and a man was sent there. He traveled a long distance, involving considerable expense. When a service-man starts on one of these problems it is just as though a jig-saw puzzle were tossed in his lap. He must start from scratch and work patiently until the trouble is found.

In this case the foreman was a young man who had been recently promoted. He was asked how he mixed the wash coat. He said he used equal parts of white shellac and alcohol. The service-man immediately recognized that this was the cause of their finishing trouble. He asked the foreman why he made this mix. The foreman replied that the old finisher had done it that way and naturally he followed suit.

The service-man explained that a mix as heavy as he had been applying was bridging the pores of the veneer. When the filler was applied and padded, it did not have a chance to "take root." It was

partially pushed out, which created the "hungry" appearance after the surface was rubbed.

Six tables were started through and a wash coat was made up and used which consisted of four parts of alcohol to one of shellac. This thin wash coat stiffened the surface fibers of the veneer. Then, after a light sanding, the filler was applied and allowed to dry. It packed into the pores and produced a smooth well-filled job. These tables showed a perfect finish after being rubbed.

Naturally the material is blamed for the majority of finishing troubles, but in this day of quick changes, every material is so thoroughly checked that the blame usually can be placed where it belongs —often on incidents like the one just mentioned.

All Grades of Finishing Serviced; Information Given

The service-man is not confined to one type of quality—in furniture, for example. He takes them all in stride from the expensive to the distressed merchandise; old world finishes, bleached blonds, toast colors in mahogany and walnut, the solid maple—from these on to the shot-gun finishes on gum and close-grain woods.

He must eliminate all operations possible; he must accurately figure mileage of materials and labor costs. When running samples in a factory, he has time to walk around a little while certain finishes are drying. He is constantly observing men at work, noticing where they make slight mistakes in their methods—small things that are important in the final finish. Being a former department head, he is tactful. The foreman finisher knows that the service-man is there in an advisory capacity and he is told what has been observed. Usually the foreman appreciates the advice given.

Once upon a time you could buy an automobile, and with it you found a bag of tools so that in case of emergency you had a chance to repair the trouble. Today your new car is void of all tools, including the tire pump. Your only alternative, if you have car trouble, is to get a skilled mechanic and pay the bill. So it is in this quiz program of finishing problems. The service-man is the answer man—minus the bill.

American Chemical Paint Co. Completes New Plant at Ambler

A letter from the American Chemical Paint Co., Ambler, Penna., discloses the following information:

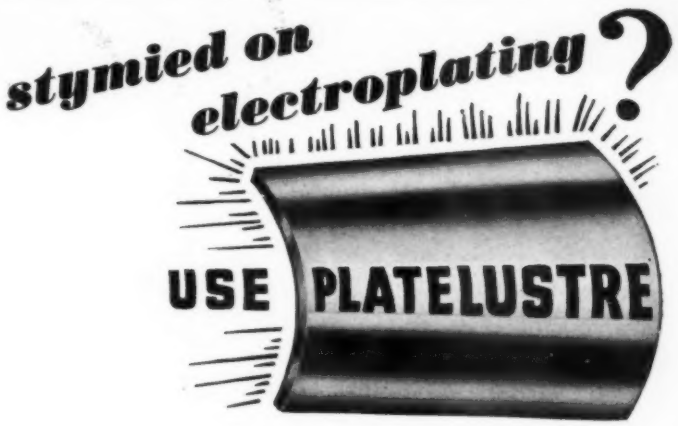
"We are just completing construction of a new modern alkali plant here in Amber and have transferred the activities of our Tidewater Division to this new plant at Ambler. We will continue to manufacture in this new plant all of our alkalis and cleaning compounds formerly manufactured at Newcastle, Dela., at the Tidewater Division.

"Through this change we are able to have all of our activities under central control here at Ambler, and we are in position to increase the efficiency and promptness of our service."

Shabby Shoes—Accidents, Sickness

Shabby shoes like shabby tires are the cause of many accidents. Workmen who are careless about their shoes are usually the ones who are most frequently on the sick list. Thin, worn soles are no protection against nails and scrap metal pieces and shavings. Cold resulting from wet feet, because of inadequate foot protection, slow down the alertness of many workers making them easy victims for disastrous accidents.

Runover heels make their wearers tired and irritable, besides causing foot ailments which result from unbalanced footing. These are but a few of many accidents and sicknesses resulting from carelessness in the upkeep and constant inspection of footwear. And while the feet will stand a lot of abuse, there is a limit beyond which they weaken or become deformed.—N. L. & S. F. A.



With the electroplating industry handicapped by priorities and the scarcity of metals, M & W Platelustre is the answer for many a manufacturer who wants a colored metallic finish. Platelustre is a brilliant, semi-transparent finish which makes polished metals resemble other metals, such as brass, copper, bronze, or anodic or chemically treated aluminum or steel.

Platelustre is applied by spraying or roller coating and is available in a large assortment of colors, which, for interior use, are fast to light. It is supplied for either air-drying or baking. Two color finishes can be obtained by "relieving" operations. Flat stock finished with certain grades of Platelustre can be formed after baking.

Among the consistent users of Platelustre are manufacturers of compacts, casket hardware, lighting fixtures, novelties — and other products where a brilliant, colored metallic finish is desired.

Our service department will gladly give you full particulars.

Maas and Waldstein Co. Newark, N. J.

Branch Offices and Warehouses . . . 1658 Carroll Ave., Chicago . . . 1228 W. Pico Blvd., Los Angeles

LACQUERS PIONEERS IN PROTECTION ENAMELS

The finish that does a BIG job . . .

It's not only the "big guys" who take punishment. Small wares like baseball bats and toys, display racks and lawn-mower handles, novelties and giftware, get plenty of knocking around. They need a finish that'll give them powerful protection, that'll keep them goodlooking under the toughest treatment...They need *shellac.*

Strength... Beauty... Endurance

When you use shellac as a finish, you don't get merely one of the qualities your product needs, you get *every single advantage* a finish can possibly give you.

You get *ease of application,* Shellac dries quickly, bonds perfectly with the wood, or forms a super-shield on metal.

You get a *clear, transparent finish.*

You get a *beautiful surface* that helps make your product more attractive.

You get a *strong surface* that offers real resistance to careless handling.

You get an *enduring finish* that keeps your product in use for years afterward.

No matter what you have to finish, there's a way that *shellac* can do it more easily, more economically, more effectively. Look into shellac, and watch your sales look up!

For specific information regarding your particular finishing problem, write to:

SHELLAC INFORMATION BUREAU
65 Pine Street • New York City

Infra-Red Lamps

Nalco inside-silvered carbon filament lamps have been especially developed for infra-red ray processes in drying, baking, heating, and dehydrating. The pure, polished silver in the base end of the lamp acts as a reflector to project the infra-red rays toward the surface being worked on. These lamps are of the carbon filament type, such as are used in many of the car and truck factories for drying the original finish. The manufacturer claims that the red-ray emanation from the carbon filament falls in the more desirable band on the Angstrom scale for maximum drying efficiency.

Nalco inside-silvered lamps are available in the model R-40, 250 watts, 110-120 volts. Clear glass infra-red lamps are also available in the model PS-30 and the G-25. The clear-glass types require separate reflectors which the manufacturer can furnish in the gold-plated or aluminum.

These lamps are manufactured by North American Electric Lamp Co., 1030 Tyler St., St. Louis, Mo.

Air-Driven Mixer

The Mixing Equipment Co., Rochester, N. Y., announces the addition of two new models to their line of mixers. These two propellor-type mixers, the AR-25 and AR-33, each have an air-driven motor—the first units with this type of propulsion offered by the company.

The turbine-type air motor used in each of these mixers is especially designed for agitator duty with built-in muffler for quiet operation, and has a low rate of air consumption. The mixers are built for operation at air pressures of from 60 to 120-lbs., with the optimum operating range between 70 and 90-lbs.

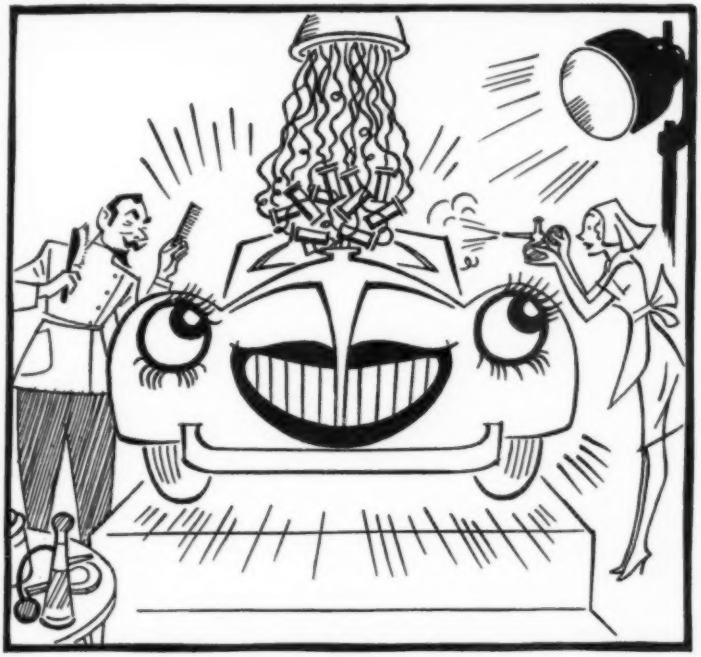
Other features of these air-driven models include a quick removable shaft for ease in cleaning (adjustable shaft length for various sizes of containers) and sturdy construction, with an extra ball-bearing to remove whiploaded from the motor bearing. A universal clamp permits the mixer to be used at any angle in the tank. This provides complete control over the mixing action including: intentional vortexing, mild swirl, or rapid bottom to top turnover. A patent has been issued on the ball and socket clamp.

New . . .

MATERIALS
SUPPLIES
EQUIPMENT

The mixers will attach to any container or vessel. A complete line of accessories, various types of impellers, support brackets, etc., are avail-

One of the air-driven types of mixers.



Who Can Resist The Body Beautiful?

In body work, "S.A." doesn't mean sex appeal, it means *sales* appeal. Outstanding body builders rely on our industrial tapes to obtain special effects through masking, striping, color separation. These modern tapes stick at a touch and need no moistening. They fit snugly and come off cleanly. They provide scratch-proof protection for finishes and surfaces during transportation. Send for free samples.

INDUSTRIAL TAPE CORPORATION
NEW BRUNSWICK, N. J.
HEADQUARTERS FOR EVERY TYPE OF TAPE

able for special applications, while a full range of metals and alloys for shafts and propellers permits their use in any liquid.

Officials of the Mixing Equipment Co. stress the fact that air-driven mixers are not designed to supplant electric-driven models. In certain applications they do have definite merits. An air motor is totally enclosed and non-sparking, thus eliminating hazards from this source. Neither can it be burned out by overloading.

The initial cost of an air-driven mixer is about the same or slightly less than an electrically-driven mixer with a semi-enclosed motor. If the comparison is made between an air mixer and an electric mixer with explosion-proof motor, the first cost of the air driven model is much less. Operating cost of the electric mixer is, however, lower due to the cost of producing an adequate supply of compressed air.

In an air-driven mixer a throttle permits the use of varying speeds to match each mixing operation. In actual use the speed of the air-driven motor will also vary with the load and with variations in air pressure, a definite advantage in some cases.

The "Lightnin" AR-25 operates at 1750-r.p.m. A 36-in. shaft with 3-in. propeller is standard. Weight is 26-lbs. The AR-33 has the lower operating speed of 400-r.p.m. and comes equipped with a standard 36-in. shaft. Propeller size is 7-in. Weight of the complete mixer, 29-lbs.

Oven Safety Control Equipment

The Dry-Sys Safety Control has been developed as an efficient safeguard against fire and explosion hazards caused by combustion failure or improper ventilation in gas-fired or gas-piloted ovens, washers, furnaces, and heating systems. The control provides a remote and complete operating station, regardless of the number of burners, for all of the ventilating and heating equipment that is found on a modern industrial installation.

In the event that the flame at any burner becomes extinguished, the sensing device causes the control to immediately shut off the fuel supply to all of the burners. This mutiplicity of control is accomplished through a single control station.

Enclosed Safety Control for bake ovens, etc.

The Dry-Sys Safety Control is not merely an instrument but is the heart of a complete system of safety operation. It functions as the operating and supervising control of externally located safety devices and electrical apparatus for the control of the equipment being operated, such as: Magnetic motor starters with interlocks for operating all of the supply and exhaust fan and blower motors from a single control at the cabinet; Dry-Sys air-flow switches for automatically insuring adequate ventilation at all times; pressure switches for automatic supervision of proper fuel pressures; thermal switches for protection against excessive heater delivery temperatures; spark ignition for the electrical igniting of pilot burners; flame rod assemblies for the instantaneous detection of flame failure, and electrically-operated valves in the fuel lines.

Profits through Priorities

SEARCH FOR SUBSTITUTE FINISHES UNCOVERS IMPORTANT IMPROVEMENTS

BY I. R. MESSER

SHORTAGES in the field of industrial finishes may be blessings in disguise . . *Let me explain*: Many manufacturers have (for one reason or another) been using coatings that are neither completely efficient nor basically economical for *either* their product *or* their process.

Be Prepared to Meet a Shortage

In such cases, the forced, scientific search for a substitute will undoubtedly disclose opportunities for permanent improvements . . This is happening every day.

Prescription Finishes, Best Answer

If you have never had a good *prescription* paint laboratory analyze your coating problem, you may be in for a pleasant surprise. Specialists in this kind of work will "tailor make" a paint formula to fit your needs *exactly* . . and where a certain ingredient is no longer available they'll often find a substitute that out-performs the long accepted original.

It May Happen to You

The important point is to be *prepared*. Don't wait until a priority ruling pins you down. Submit details of your finishing requirements, at once, to a *true prescription* house like The Watson-Standard Company at Pittsburgh. This concern *guarantees* a manufacturer *answers* based on his individual conditions and not just the application of a standardized formula. Perhaps they'll find a way, at once, to give you better coatings at lower costs, but in any event, they can guide you through the difficult times ahead and you certainly are not putting yourself under any obligation.

Procrastination Is Dangerous

The Watson - Standard Company for years has specialized in prescription finishes for all surfaces by spray, dip, brush or roller application. Their field comprises every type of industry under every condition. Their record is impressive. To them, *the problem, not the prospect*, is the important *thing*. Write to them direct — today — with the assurance that your letter will receive the personal, confidential and sincere attention of some of the most highly skilled paint chemists in the country.—Advertisement.

THE WATSON-STANDARD CO.

Manufacturers of PAINTS . . VARNISHES . . INDUSTRIAL FINISHES AND LITHOGRAPH COATINGS

Factory and General Offices: Pittsburgh, Pa.
Warehouses: Boston, Buffalo, Detroit, New York

which close immediately should there be failure at any part of the entire system.

An external alarm system is provided for as a notifier in the event that any part of the system should stop.

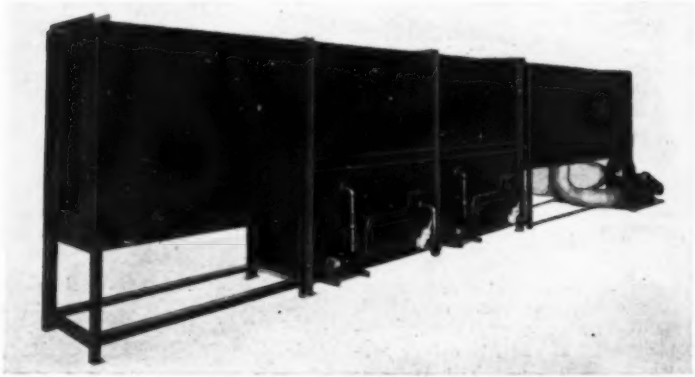
Within the safety control cabinet is an integrally-built electronic time delay for the purpose of automatically preventing any ignition taking place until the ventilating equipment has been completely started and operated for a predetermined length of time, usually amounting to five or ten minutes. This is for the express purpose of thoroughly purging the entire ventilating system and the space being ventilated of any accumulated fumes from work or from fuel leakage prior to the introduction of any heat.

It will be noted that all operations and equipment that are to be safety controlled are automatically operated while the remaining operations requiring no special attention from a safety standpoint are purposely left to manual control. A definite sequence of starting is required of the operator, since the pressing of push buttons in improper rotation produces no results and insures that all equipment be started in a predetermined relation to each other.

This equipment, manufactured by Drying Systems, Inc., 1800 Foster Ave., Chicago, Ill., has been thoroughly tested in plants of well-known manufacturers. It has proved its merit and practicability in protecting industry against flame failure and fire hazards on all types of heating installations.

Products-Washing Machine

One of the newest products-washing machines developed by The Alvey-Ferguson Co., Cincinnati, Ohio, is illustrated here. It is designed especially to wash chromic acid off heavy chrome-plated parts, then dry the parts before packing. This products-washer and dryer is equipped with an overhead trolley conveyor to transport the parts through a succession of cold, hot and distilled water rinses and the drying. Special nozzles are provided for atomizing the spray. The steam-heated, blow-off type dryer recirculates the air. Tanks and chambers are constructed of ¼-in. copper bearing plate. Other products-washers recently developed by The Alvey-Ferguson Co. are being used in National Defense Work for washing cartridges, shells, gun barrels, engine parts, etc.



This products washer and dryer has an overhead trolley conveyor to carry parts through.

SPEEDROY

FAST DRYING ROYALTY FLEXIBLE LACQUER

- UNIFORMITY
- QUALITY AND
- PERFORMANCE

- Gloss—Rubbing—Non-Rubbing
- Satin—Flat—Dead Flat

NOROY **SEALERS** NOROY

Fill Well—Sand Easily—Good Bond

RUDLACO

RUDD LACQUER CORPORATION
127 MAIDEN LANE, NEW YORK
Factory—Rahway, N. J.

Polytect as Filler Under Finish

Polytect, Inc., 99 University Place, New York, N. Y., announces an economical material and method for filling porous surfaces preparatory to the application of finishing coats.

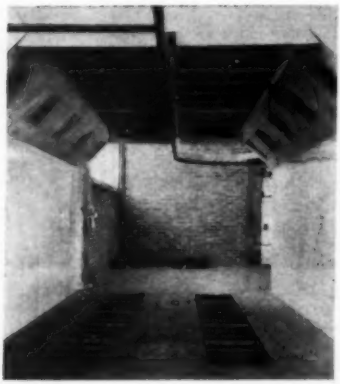
The material used is Polytect, a creamy paste which is available in a variety of colors to match the finish coat, and which dries quickly, becoming as hard as the finishing coat but not brittle. It has excellent adhesion but will not chip, crack or peel, nor will it cause such defects to occur to finish coatings applied over it.

The paste is applied sparingly to the surface to be filled and is immediately rubbed into the open grain or pores. On flat surfaces it is preferable to apply the material with a portable sanding machine or buffing disc, the pads of which have been covered with soft leather (smooth side up). The movement of the machine will distribute and press the paste into the open grain or pores and at the same time hasten the drying and smooth the filled and sealed surfaces. There will be no surplus left over which could not be removed with a duster. Where necessary, the operation can be repeated—for instance, where there are some deep scratches or cracks.

No sealer or primer is required and no after-operation is needed to prepare the surface for final coats of enamel, lacquer or varnish.

On small or irregular shaped articles, where the employment of a rubbing or buffing machine is not practicable, the palm of the hands can be used effectively for rubbing in and smoothing out the filler. Polytect will not affect the skin, and it can be removed easily with plain water.

This method of filling eliminates sanding. The rubbing in of the filler serves to level up and smooth the surfaces perfectly, so that finishing coats can be applied when the material and surface are dry.



This tunnel-type conveyorized down-draft water-wash booth is installed for spraying airplane wings in the factory of the Ryan Aeronautical Corp., San Diego, California. Photograph, courtesy of the Binks Mfg. Co.

Monobleach Ready

A new product developed and marketed by V. J. Dolan & Co., 1830 N. Laramie Ave., Chicago, Ill., is called Monobleach. According to Mr. Dolan this material is outstanding for several reasons.

In the first place, as the name implies, Monobleach is a single unit bleach and departs from the regular custom of furnishing No. 1 and No. 2, etc. According to extensive tests conducted in the laboratory, Monobleach is very powerful and, since it is a single unit, there is no unnecessary measuring or handling in connection with its use.

After application, the surface of the wood is left absolutely neutral so that finishes applied over it will not change in color.

Ultramarine Blue Specifications

Copies of the proposed revision of Federal Specifications for Ultramarine Blue were sent out with a letter dated August 21, 1941 from the United States Department of Commerce (National Bureau of Standards) Washington, D. C., and signed by E. F. Hickson, Chairman, Technical Committee on Paint, Federal Specifications Executive Committee.

DURABILITY

A Recognized Quality

IN

RELIANCE

FINISHES

TUF-TEX RUBBING VARNISH SPEDE-VAR
DURATONE STAINS SYNTHENOID ENAMELS
LO-VIS-LAC LACQUERS
VENEER-ITE AND BONNIE WOOD

RELIANCE VARNISH COMPANY
INCORPORATED
LOUISVILLE KENTUCKY U.S.A.

Gas Heat for Finishing Room

We wish to warm our finishing room this winter, using natural gas as fuel. We would appreciate it very much if you would give us as much information as you can in regard to the kinds of heating units or stoves that are in use in other finishing rooms. As it is getting a bit late, your prompt compliance to this request will be appreciated. — S. Wood Products. (Texas).

Editor's Note: A reply by Reznor Mfg. Co., (Mfrs. of gas-heating equipment) Mercer, Penna., follows:

It is our opinion that in a paint room, a direct gas-fired heater should not be used. However, it is possible to heat such spaces with direct gas-fired heaters. This is accomplished as follows: The heater is installed in a room or space adjacent to the finishing room, and the warm air is admitted to the finishing room by means of a short duct leading from the discharge side of the heater. The important point is that air is not returned from the finishing room to the heater, as it would be in a conventional installation.

In most finishing rooms there are one or more exhausts installed in conjunction with spray booths, etc. These exhausters remove a sufficient quantity of room air, and fresh warm air is introduced entirely by the heater located in an adjacent space. This system results in a somewhat higher fuel cost than would be the case in a conventional installation, but due to the inflammable atmosphere condition which is faced, there is no other alternative.

We are sending you a copy of our catalog U42 and price-data sheet U42PD1 describing and illustrating our complete line of gas-fired suspended unit heaters which, you will note, are furnished in three types, namely propeller fan, blower and duct type. On page 11 of our catalog U42, you will find a sketch illustrating an installation such as we refer to, excet that in your case the return air boot and duct would be eliminated, as the return air for such an installation would be the air withdrawn from the space in which the heater is located rather than from the space being heated.

We will be glad to have you address any further questions including inquiry for prices, to our district manager in your territory.

Questions; Answers

Questions are welcome and will be answered promptly by mail. Readers are invited to prepare and send in additional information relating to any of these questions and answers.

Limed Oak Finish

In recent issues of INDUSTRIAL FINISHING several articles have appeared on "Lime Oak Finishes." However, I am submitting this article on the subject, hoping that it will be of benefit to some of your readers. We are supplying this system to several of our customers and they have had excellent results.

Assuming that the wood has been

SAVED! 45-Minutes Drying Time!

with WESTINGHOUSE RADIANT HEAT DRYING LAMPS

HOW MUCH TIME COULD YOU BE SAVING?

One Case Out of Thousands!

Whatever type of heating or drying problem you have in *your* plant, chances are Westinghouse Radiant Heat Drying Lamps can save time and money for *you*, too. Case illustrated shows ten R40 drying lamps removing moisture from granulated cellulose acetate prior to loading in press. Drying requires *15 minutes*, replacing a steam dryer requiring *one hour*.

Westinghouse Drying Lamps are also being used to dry paints, lacquers and enamels faster and better.

Portable radiant heat drying rack used in shop where a body repair gets 3 prime coats and 3 finish coats of paint. Former drying time per coat: about 1½ hours. Radiant heat time: 20 minutes!

Faster! Cheaper! Easier!

It's easy to see why these lamps do a faster, better, more economical job; the infra-red rays penetrate *deep down*, starting the drying or heating process from the inside *instantly, uniformly, efficiently*. Easy to use as light bulbs; no costly insulated ovens or pre-heating required. See your local Westinghouse Mazda Lamp distributor or write for folder, Westinghouse Lamp Division, Bloomfield, N. J.

Westinghouse

RADIANT HEAT DRYING LAMPS

selected for uniformity of color or bleached to obtain the same results, the procedure would be as follows:

1—On the bare wood, spray a full wet coat of the following:

White Lacquer Enamel.....(parts)	1
Lacquer Reducer	15

This material is so thin in body that it will not coat the pores sufficiently to interfere with filling, but it will leave a slight haze on the flakes of the wood.

2—Wash-coat with a clear bleaching lacquer or a water-white sealer, reduced one part sealer to six parts reducer. Allow to dry and sand lightly—just enough to remove what wood fibers have raised.

3—Fill with a white, off-white or gray white filler, wiping the surface free of all streaks, and allow to dry.

4—Apply one coat of water-white sealer; dry and sand. Apply one or two coats of water-white lacquer, either rubbed effect or gloss. Dry overnight; rub and wax.

This system will give uniformity of color on every piece in the group and will give a cool, frosted, translucent finish that is very pleasing and soothing to the eye.—JOE WILBOURN.

Pinholes in Philippine Mahogany

We note with interest the Q & A published on page 67 of the October issue under the title, "Finishing Philippine Mahogany," wherein "S. G. F." advises that he is having trouble due to pock marks and pinholes in the finishing of Philippine mahogany, although he uses good grades of finishing materials in the accustomed manner.

We can readily understand his difficulties, particularly if he does not understand the causes underlying the difficulties in finishing this particular species of wood. We do not agree that filling is entirely at fault, as we have had customers who took great care in filling Philippine mahogany and yet they encountered pinholes in the finished product.

Through our research with this species of wood, we have come to the conclusion that Philippine mahogany requires a chemically-treated glue size to properly prepare the finishing surface so that no pinholes will appear. In this connection we would like to call your attention to an article on pages 56 and 58 of August 1937 issue of this magazine in which Frank V. Tischer outlines in detail the causes for pinholes in Philippine mahogany and the proper treatment to eliminate same. Excerpts of the article follow:

"I have made a study to overcome pinholes in finishing large tops of Philippine mahogany and will explain in detail the cause of pinholes in Philippine mahogany so that people engaged in this class of work may benefit from this research.

"Philippine mahogany is regarded as a difficult wood to finish but, if the cause of this difficulty is removed, it will finish as easy as maple or cottonwood.

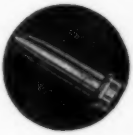
"Philippine mahogany grows in a damp country and is very susceptible to water. The pores are large and filled with a starchy hygroscopic matter that swell quickly and will dry out thoroughly only at 70° to 100° F. and 15% to 20% relative humidity. A low humidity is the only effective remedy in overcoming pinholes. (Humidity can be regulated by dry heat.) High humidity and high heat always cause pinholes in woods where the pores are large.

You can always Depend on MILBURN

FINISHING, WELDING and CUTTING EQUIPMENT

TYPE OM SPRAY GUN—Light in weight, compact. Operates as production unit for continuous service or for touch-up work. Features "Hollow Air" atomizing principle. Top efficiency with all types of spray material.

MILBURN CUTTING AND WELDING TORCHES—Sturdily constructed to highest government standards. Illustrated is the Type HMS—a modern development in the welding art. With attachments it can be used for welding, brazing, soldering and cutting.



MILBURN CUTTING AND WELDING TIPS—Made of special rolled copper and embody outstanding features to give high efficiency, longer life and lower consumption of gas. Interchangeable.

Write for complete catalog of paint spray equipment, welding and cutting apparatus and regulators.

The **ALEXANDER** MILBURN *Company*

1402 West Baltimore Street — — Baltimore, Maryland

Look at This
SPRAY GUN VALUE

CROWN
TYPE
"SC"
$16.20
COMPLETE

Full Fluid and Spray Width Control . . . Convertible from bleeder to non-bleeder type. Self-aligning Spray Head . . . Cover Assembly adaptable to metal quart container or standard pint paint cans . . . Ideal for lacquers, enamels, etc. . . . Write for catalog.

CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd., Los Angeles, Calif.
Warehouses in Principal Cities

NATIONAL PAINT
DICTIONARY

1940 — $5.00

More than a Dictionary—an Encyclopedia. This is the most complete work of its kind now available. It includes definitions of trade names of raw materials used in the Paint and Allied industries—also charts, tables, useful information and miscellaneous data to which you can refer often. It describes all the important testing devices and apparatus used in the laboratory, together with illustrations and is strictly technical, thoroughly authentic and completely unbiased.

INDUSTRIAL FINISHING
1142 N. Meridian St., Indianapolis, Ind.

"The hygroscopic matter in the grain of the wood swells in damp weather and closes the pores tightly when the hydrometer registers more than 20. Water-stain, alcohol in shellac, etc., also help to swell the grain to a great extent.

"Under such conditions, although the wood appears perfectly smooth before or after filling (even when examined under a magnifying glass) the cause creating pinholes will not be affected until the first coat of varnish has been applied and dried. The chemical dryer in varnish coagulates the hygroscopic matter in the grain of the wood; the pores contract and pinholes result. The facts stated in this paragraph can be verified in the following manner: Remove the varnish with varnish remover, then refill and revarnish.

"Taking into consideration the facts outlined in the previous paragraphs, I have proved to many prominent factories who use Philippine mahogany extensively that when this wood is treated with a chemical solution in the sanding department after rough-sanding, then dried thoroughly overnight and polished with No. 6/0 sandpaper, pinholes with not develop in the finishing department.

"This chemical solution coagulates the matter in the pores of the wood and, when the board is exposed to high humidity or when water stain is applied, the grain cannot swell and close the pores. The surface so treated requires very little sanding after water-staining.

"An effective chemical solution that is capable of coagulating the hygroscopic matter in the pores of Philippine mahogany, and which is generally used by furniture factories is available . . ."—The Liquafill Mfg. Co.

Finishing Novelty Furniture in Sap Gum

I am writing you to see if you can solve a problem I have in regard to finishing new wood. I make different furniture novelties, such as small tables, whatnots, racks, etc. At present I sand my wood first with No. 1/0 sanding cloth and then polish it with a No. 3/0 cloth.

I have used different kinds of stains, some pigment stains and some oil stains. These are wiped on with a cloth dipped in the stain. Then I use a sealer, sand it, and follow with a lacquer finish. This is all put on with a spray gun.

I would like to know if I am using the right process in finishing. I have seen different furniture that did not look as though it had been wiped. How can I get these results? My products look too much like they have been painted instead of stained. Please tell me if I can make these stains myself, or if I should buy them ready mixed. I use all sap gum wood.—T. A. P.

If all of the furniture is made of gum wood I would recommend, first of all, the use of a finer grade of sandpaper. I would try No. 2/0 for the first operation and smooth up with No. 3/0. I would also try sandpaper instead of the cloth-backed abrasive. The No. 1/0 sandpaper is coarse and will cut deep. This will leave scratches which will show up where an oil wiping stain is used; and it will result in a painted effect.

Perhaps the stain you are using is not entirely dry before your coat of sealer is sprayed on. This would cause a cloudy effect on your

I. C. D. FORMULA NINE
« wax free REMOVER »
for paint, varnish, lacquer, baked enamel, cement, etc.

NON-INFLAMMABLE—EASY TO APPLY
. . . NO AFTER-CLEANING

I-C-D FORMULA 9 is safe, non-inflammable and wax free . . . can be brushed or sprayed . . . Quickly removes all kinds of finishes and coatings . . . Doesn't raise grain nor discolor . . . It costs less to use . . . saves time, labor and material.

SPECIALTY COATINGS—I-C-D laboratories have specialized in formulating and manufacturing non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Quick action, quick results if possible and a quick answer is promised.

INDUSTRIAL CHEMICAL DEVELOPMENT CORP.
331 MADISON AVE. NEW YORK, N. Y.

WON'T MAR
Here's toughness that "sheds the knocks"
Just one quality of Mar Proof Lacquer—its exceptional toughness—is good reason to use this modern finish on your product. But you'll get more than protection in Mar Proof! . . You'll get fast-working qualities that save finishing time . . and get beauty worthy of your finest cabinet woods. Send for the facts and a production test on Mar Proof Lacquer . . Made in Clear Gloss Rubbing and Satin Finish. For best results, use Mar Proof Lacquer Sealer for first coat.
Write for FREE Working Samples
THE SCHAEFER VARNISH CO., Inc.
Louisville, Kentucky
Schaefer's
MAR PROOF
LACQUER

finished surface. I suggest the following procedure:

After all surfaces are sanded smoothly, I would apply U. P. S. (uniform penetrating stain) primary stain reduced and intermixed to the right shade. These stains are made of aniline dye and will not raise the grain. They are fast to light and penetrate quite deep. They can be sprayed, dipped or brushed, and will not leave a muddy or painted effect after the finish is applied.

These stains can be purchased in various shades and can be mixed to produce the exact shade you wish. An application of this type of stain will be entirely dry in about four hours. Then you can finish with your lacquer without any danger of your color looking muddy or cloudy. These stains must be reduced with the stain solvent recommended by the company that sells them. (Name on request).

I know that these stains are very satisfactory with some types of work, especially in the novelty furniture and display fixture trade.

At this point it may be well to bring to your attention the fact that any stain will produce different results on different kinds of wood—and on the same kind of wood it will vary in tone due to variations in wood texture. If your company uses sap gum it might be well to touch up all sap parts with this same type of stain reduced about one-half. After this prestaining is dry, then stain the entire article and the color will be more uniform.—R. N. FILKINS.

I can find no fault with the way you prepare your new wood—and the selection of pigmented stains also is in line with your products.

But here is where the finishing is important: First obtain a pigmented uniform stain; then either spray it on or dip it. After allowing ample time for the stain to set up or flatten out, rub the surface in circular motion, first with a light hand. This tends to blend the color to the hard and more stubborn texture of the wood. Then wipe the stained surface rather firmly with a clean cloth, wiping with the grain of the wood. Do not "scour" the surface, but at the same time do not leave it muddy or smeary. Above all, do not use a rag wet with stain for wiping. This would give the article a smeared and painted look, and would invariably cause the finish to deteriorate. Then too, if an excessive quantity of oil stain is left on the wood to dry, it will bleed out under the lacquer sealer, thereby adding to the painted appearance of the wood.

After having advanced as just explained, I would use a tinted lacquer sealer, after the uniforming stain had dried overnight. We use pigmented lacquer shading stain which is obtainable in concentrated form in a shade to blend with the original color. We mix one part of shading stain to three parts of sealer, and spray a wet coat over all. The we turn the article and "build up" the light places to harmonize. A non-grain-raising or "Permo" stain can be added to the sealer instead of the lacquer pigmented stain, if you prefer. When the surface is dry, follow with a light sanding and finish with lacquer or varnish. A cup spray gun with some of the tinted sealer is sometimes useful to catch any white edges or stubborn spots between coats.

The merits of this method are that you get more transparency

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for Screen Process or Air Brush application to your items. With the wide range of beautiful colors available for shipment from stock, you can impart soft, shimmering velvet and suede effects. You'll enjoy using CLAREMONT FLOCKS of just the proper, uniform length; they cost little and add much to the attraction and sales value of your product — with greater profit to you — particularly when applied to Holiday items.

Write for Color Card and Samples.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

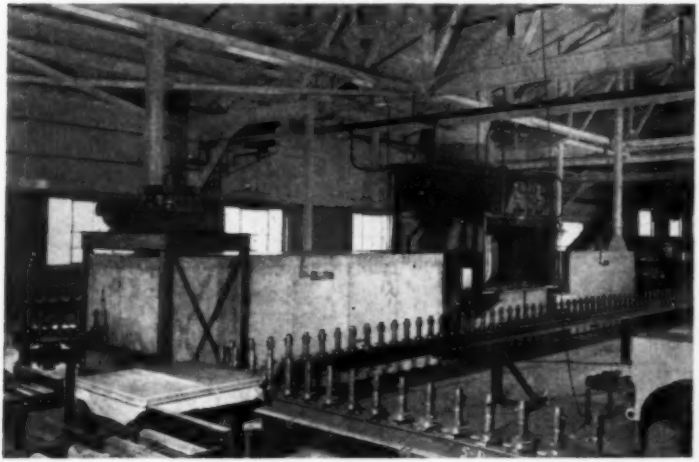
The Country's Leading Makers

and adherence, and most any kind of wood can be used. Maple, sycamore, birch, gum or willow can be shaded to match standard walnut or mahogany colors. I do not recommend using ordinary lacquer shading stains in sealers, but the method outlined here has proved to be successful over a period of years. Where cost does not prohibit it, this tinted coat can be used as the second or intermediate coat, thereby giving the finish more depth.—J. W. MCFADDEN.

Wax to Prevent Doped Fabric From Sticking

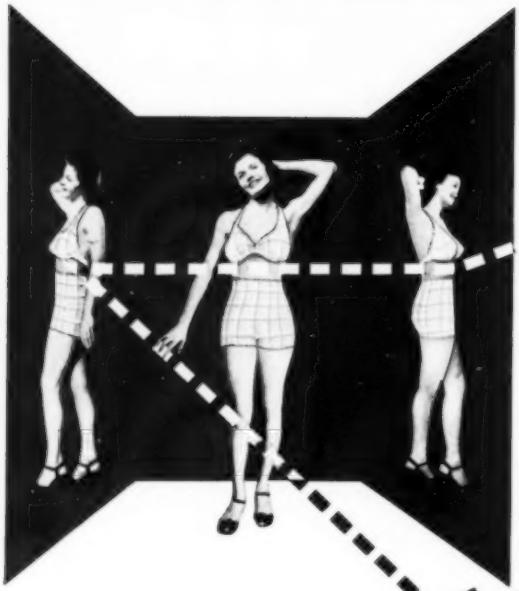
In a recent issue of INDUSTRIAL FINISHING, I noticed that a reader asked for suggestions on how to prevent doped fabric from sticking to aluminum and wood surfaces over which the fabric is stretched. Your suggestion of waxing the surfaces is a good one, but the right type of wax must be used to avoid serious trouble. Old style waxes such as automobile, furniture and floor waxes cannot be used, because the dope will redissolve them when it contacts them. It requires only a minute amount of wax redissolved in a lacquer film to slow the dry badly and produce a mushy film.

The only wax to try is the new emulsified floor wax that dries with a gloss and requires no polishing. When I say new, I mean relatively new, as this type of wax has been on the market for about eight years. This type of wax is thin as water and applied by flushing on or swabbing. *(Continued on page 73)*



This view shows equipment for spray-painting shells in a new ordnance plant. It is an overall view of a complete line, with pre-heating oven, spray station, Dynaprecipit water-wash spray booth, baking oven, and loading and unloading stations. The shel are coated automatically at the rate of 1000 per hour. Photo, courtesy of Bin Mfg. Co. Published by permission of the U. S. War Department at Washington, D.

FITS
like the paper on the wall...



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There's more than meets the eye in any finish. I
must not only give the product added sales appea
and deliver satisfactory field performance, bu
it must also fit economically and efficiently int
your production.

Ferro's VEDOC technicians are skilled in th
selection of the individual formula that will ex
actly fit your handling and production and you
finish requirements. Every batch of VEDOC Liquid
Plastic is manufactured to rigid specifications

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Vedoc

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TAILOR MADE TO FIT BOTH PR UCT

a way you look at it...

ME S ALL THE REQUIREMENTS!

nish. VEDOC is designed to be used in the average
appe synthetic enamel setup. It is available in either
ce, bu white or black. Application is by spray or dipping.
tly int If you feel that your production could be
improved, consult Ferro's engineers. They'll plan
in th ideal equipment for you, and take fixed responsi-
will e bility for your entire finishing setup. Ferro engi-
d you neers have had over twenty years' experience in
Liquid planning and constructing complete finishing
cations room equipment. A consultation will cost you
nothing and may save you many extra dollars.

O ENA CORPORATION, Cleveland, Ohio

qu d plastic finish!

I PR UCTION AND FINISH PROBLEMS

summing up in 10 points . . .

1 Ferro developed a converting process that arrests development of plastic material in such a way that a hard durable film is formed. This is VEDOC, which can be applied by dipping or spraying and then baking.

2 VEDOC WHITE in one coat will produce on primed or unprimed metal a smooth and lustrous surface.

3 There is an especially designed VEDOC for every product.

4 VEDOC is designed to bake at a variety of time and temperature schedules.

5 VEDOC stays white, is non-yellowing. Covers in one coat. Has high gloss and is easily washed.

6 VEDOC is not brittle but tough; firm and hard, it resists the entrance of dirt and grime.

7 VEDOC is made in both WHITE and BLACK. Colors are made up only on special order.

8 VEDOC samples are available for free demonstration in your plant.

9 Ferro will engineer and install for you the most efficient equipment for application of VEDOC.

10 VEDOC can be applied in the average setup for use of synthetic enamels.

Vedoc

THE VERSATILE, ECONOMICAL, DURABLE, ORGANIC COATIN

The reason for using this particular type of wax is that the solid content is almost 100% carnauba wax—and of all waxes and wax compositions, carnauba is the least soluble at ordinary temperatures. It would have the least tendency to dissolve in the lacquer coating applied over it. Please understand, of course, that this is all theoretical, as I have not had an opportunity to test this out. At any rate, if any wax will work in this problem, this is the type to try.—HARRY DANIELS.

Industrial Finishes for Non-Defense Orders

(Continued from page 15)

lacquer manufacturer wet down in water. Heretofore it has been common practice to use alcohol for this purpose. This wetting down is done to reduce explosion hazard in shipping. The lacquer manufacturer who has equipment for dehydrating cellulose wet down in water, will be in better position to serve his customers.

What About the Future?

It is hard to predict what the immediate future holds for the industrial finishes industry. No one knows yet, just how far our defense and lend-lease programs will go. From a comparatively modest one billion dollar program, it has now passed sixty billions of dollars, with a possible hundred billions in sight.

Certain factors, now evident, will have an effect on our industry. New plants are under construction to increase the output of alcohol, formaldehyde, toluol and other paint and lacquer ingredients. With curtailment of automotive, house-

R F P

REPLACEMENT FINISHES

Working with our customers to develop special colored lacquers and synthetics to replace various plated finishes is but part of the Randolph Service. Cheerful and efficient cooperation is extended on any finishing problem.

Dopes—Thinners
Lacquers—Synthetics

RANDOLPH
FINISHING PRODUCTS CO.
Carlstadt New Jersey

Assures Better and Faster
FINISH BAKING

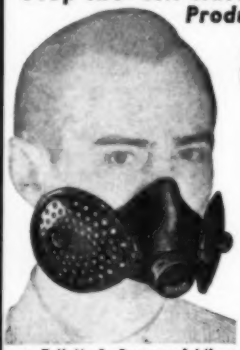
The proper finish baking oven will improve results, eliminate rejects, speed up production and cut costs. See Despatch for proper recommendations and the proper oven for better and faster finish baking.

FOR DEFENSE

A DESPATCH OVEN BAKING FINISH ON MOTORS

WRITE FOR DETAILS
DESPATCH OVEN COMPANY
MINNEAPOLIS, MINNESOTA

Stop the "Air Raids" on Production!



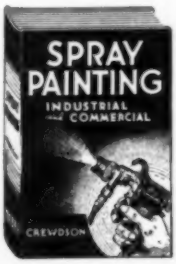
Cesco No. 94 RESPIRATOR

★ Full U. S. Bureau of Mines Approval No. BM-2142 against Type A (Silica), Lead and Nuisance Dusts, PLUS a "lamb's-wool" feel, is gaining universal preference for this new Cesco No. 94 Respirator. Try it for better, faster finishing! Write

Chicago Eye Shield Co.
2367 Warren Blvd. Chicago, Ill.

Industrial Spray Painting

Contains more than 125 pages. Fully illustrated. Cloth. Price.....$1.50



This new book covers the fundamental principles of spraying technique, together with the latest developments and practices of this craft. Covers common paint pigments, paint extenders, enamels, oil and spirit varnishes, shellac lacquer, synthetics, all types of modern air guns, spraying technique, spraying standard materials, spraying defects, their cause and remedy, flock and suede finishes, striping and lettering, pearl lacquer finish, also a section on spraying for National Defense which covers cantonments, finishing fabric-covered aircraft, finishing plywood aircraft, camouflage painting, etc.

INDUSTRIAL FINISHING
1142 N. Meridian St. Indianapolis, Ind.

hold appliances and other production, a huge volume of paint and lacquer ingredients will be made available for other uses.

On the other hand, a dozen new plants have recently been started for the production of bombs and shells. These will all need explosives and many of them are lacquered or enameled.

As platers are unable to get adequate supplies of metals, a demand is created for more paints and lacquers. Some metals, such as aluminum, copper, brass, etc., are sometimes polished or scratch-brushed. As these metals become scarce, they will probably be replaced with materials that may require paint and lacquer finishes.

Some of the present shortages are probably due to panicky buying. More people are working and those previously employed are earning more money. The tendency is to spend it for tangibles. Probably some of this is in fear of imminent inflation. If these fears can be allayed, this condition will change for the better. Shortages will lessen and manufacturers should be able to carry on—with less volume, perhaps, but on a saner basis.

It is during times like this that our technical men have the greatest incentive to discover new things. In the finishes field, we have already directed light onto some very interesting things. When they are developed and thoroughly tested they will be available for use.

Mahogany on Walnut

DUE TO the anticipatory scarcity and high price of genuine figured mahogany, my firm is being called upon to reproduce mahogany colors on other woods including walnut. So far I have pro-

Are You a "Priority Casualty?"

Are raw material shortages and Government priorities* choking off your regular supply of finishes?

If there is a possibility that you too will have to substitute — then consider Hilo Black Japans and Enamels. They are your best bet for CONTINUAL AVAILABILITY because of their formulation.

Write TODAY for Information.

HILO

***Many Manufacturers have investigated "how and where" their products were ultimately used and have discovered they are for Defense—indirect or direct. Consequently they were entitled to Preference Ratings and could obtain Priority Certificates which helped them to continue to get their regular finishes. Have you tried?**

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have built in
YOUR PRODUCT

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duced ox-blood and several of the 18th Century colors; also, some brown mahoganies. For some of the 18th Century colors it was necessary to bleach first, to produce the desired orange cast which is so necessary in these colors. Colonial brown, ox-blood and Cordovan base colors were produced merely by manipulating mahogany stain formulas to fit the walnut. Of course, the colors were all glazed, which helped enormously to get the desired tones.—H. DEAN.

Letters from I. F. Readers

(Continued from page 11)

is easily cut by these solvents." Lacquer solvents are a mixture of several ingredients, generally certain proportions of different alcohols (butyl or amyl alcohols), esters (ethyl acetate, butyl acetate, etc.) sometimes ketones (such as acetone) and always a large proportion of hydrocarbons such as toluene, naphtha, etc., which are used primarily for cheapening the product. Of these materials the alcohol alone will act as a solvent for shellac. Ten percent of the total volume may be alcohol. Therefore, it cannot be truthfully said that "Shellac gum is easily cut by lacquer solvents."

Certain types of undercoats are blistered, wrinkled or raised by contact with lacquer solvents. Of such undercoats it can be said that they do not resist the solvents but are injured or destroyed by them. After drying out, the surface of such finishes remains rough and more or less nonadherent. Shellac, on the contrary, is softened by the solvents, permitting the lacquer to become firmly bonded to the undercoat. The lacquer and shellac at the contact surface are more or less intermingled; the joint between the two is thus firmly knit together. The film of shellac in contact with the wood remains intact.

We also state in our advertisement, "Shellac must bond firmly with both the wood and lacquer top coats." Again Mr. Young denies that shellac will do this, although he gives no clear evidence to prove this. A very thin cut of shellac, applied to a shellac-finished wood surface, will penetrate the surface of the wood, sealing it and, when dry, it will vitrify the surface so that the shellac becomes firmly bonded with the cellular structure. When lacquer is applied to this surface, the alcohol content will act to soften the top film of shellac just

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NO NEED to worry about repair jobs on refrigerators, radios, furniture and all types of porcelain. Send for our MASTER FINISHER'S SUPREME SERVICE REPAIR KIT. Contains 52 items (more than double the number of any kit yet manufactured) and includes our "N 2 Electro-Knife" selling for $7.00 which is used in conjunction with our universally accepted nationally advertised "LACSTIX" which do not lift in or under lacquer. Chest is a new type, super steel, heavy gauge Cantilever construction with leather handle. This kit is the nationally known Lubrisol Pad-O-Paque Process that will enable anyone in store or shop to produce thoroughly first-class work in less than 10 minutes practice without any instructions. LIMITED OFFER—this issue only.

If you return this advertising page with an order for the MASTER FINISHER'S SUPREME SERVICE REPAIR KIT for only $34.50, you will receive absolutely FREE of CHARGE an attractive slidetop wood Porcelkit valued at $12.50. This Porcelkit pictured at left of metal chest contains 21 items including our nationally famous Porcelstix and other items enabling you to make repairs to any type of porcelain or refrigerators in 3 to 5 minutes.

Here's a picture of the MASTER FINISHER'S SUPREME SERVICE REPAIR KIT

FINISHINE Laboratories
Incorporated
SYRACUSE, NEW YORK

enough to permit a bond between the shellac undercoat and the lacquer top coat. The action of the shellac as an undercoater is in direct contrast to that of a lacquer sealer as the sealer, due to its viscosity, will lay on the surface of the wood, not penetrating it at all.

Our advertisement states, "It must have similar coefficients of expansion and contraction." Mr. Young admits, "That might be true in part." We say that due to the bonding action and the qualities that permit lacquer to anchor itself firmly in a shellac undercoat, the unity which is developed by this action provides the finest of bonds.

Our advertisement states, "It must be an effective sealer for all spots and stains in wood." Mr. Young agrees that, "Shellac will seal the spots and stains in wood, if any." We find very few pieces of lumber of common stock, supplied to the furniture business, which do not have some spot or stain that needs to be sealed.

Mr. Young states, "Shellac can be made to work as an undercoater under lacquer if applied in a very light application, two parts of alcohol to one part of 4-lb. cut." This, in our estimation, shows very little familiarity with the action of shellac gum, as a 1-lb. cut is simply a wash coat used to hold down the fibers of the wood. It is entirely possible to use 2½-lb. or 3-lb. cuts for this work. When he speaks of a light application, to the best of our knowledge, this has always been an approved method in the furniture field. In other words, it is the highest solid content which has proven practical in use as a time saver in building up a body surface.

Mr. Young states that, "Lacquer sealer, when used under a lacquer application unifies with the lacquer coat. This gives a basic coat that bonds firmly with the wood and the top coat." We have never yet found any lacquer that will penetrate the wood enough to form a bond anchoring itself in the fibers so as to resist expansion and contraction which is an inherent process of wood.

Mr. Young states in his letter that wood finishes are scarce and that shellac would hinder the production of fine finishes. We say if proper instructions are followed, any finisher can use shellac to obtain a fine cabinet job. Proof of this is the history of shellac from 1735 on, in an uninterrupted sequence. For shellac there is this to be said. It is a standard product with many years of development from the days of the early Egyptians. It has been primarily a surface for furniture which, to the best of our knowledge, has never been excelled for solid content. Lacquer sealers be-

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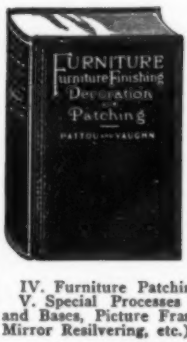
Furniture Finishing



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come the more expensive of the two when the comparative solids present are compared.

The American Bleached Shellac Manufacturers Assn., of which the Shellac Information Bureau is a part, is very glad of the opportunity of presenting its story both to Mr. Young and to other readers of this magazine. We are making a considerable drive to bring before the general public, trade information pertaining to the proper use of shellac and we hope that if there are any further questions of a nature similar to those which Mr. Young has raised in his letter, that they will be brought to our attention for discussion. — Shellac Information Bureau.

"Insulmat" Wanted

We note an item in September issue, on page 62, of INDUSTRIAL FINISHING, pertaining to sweating pipes. Will you be good enough to forward us the name of the manufacturer of this material "Insulmat?"

P. S. In the future will you please instruct your mailing department to see that this publication is addressed to me personally?—C. M. J., Works Manager of Metal Box Co.

Not having at hand your June, 1941 issue of INDUSTRIAL FINISHING, which you stated contained an article concerning "Insulmat", I am interested in securing the name and address of the company making this material. I will appreciate any information you may be able to convey to me.—G. E. W., Technical Research Div. of Adding Machine Co.

Kindly send us the name of the manufacturer of "Insulmat", which is mentioned on page 64 of June, 1941, and page 62 of September, 1941 issues of INDUSTRIAL FINISHING. Unfortunately our copy of the June issue was mislaid and we are anxious to learn more about this product.—F. W. D., Purchasing Department of Sheet Steel Co.

Brush Preservers

Due to the excessive cost of bristle brushes, scarcity and poor quality, we are interested in obtaining the names of some concerns that make brush-preserving kits or containers. We use many brushes all over our system and I believe that considerable amounts of money can be saved if more attention is given to the proper care of paint brushes. If you can give me this information it would be greatly appreciated.—J. B. L., General Paint Supervisor of large railroad.

Wire Cloth Finishing

Have you published, in the past issues of INDUSTRIAL FINISHING, any articles on the finishing of wire cloth, such as wire screen? If you have any articles on this subject, I would like to have copies of them, if I may.—H. E. C., Director of Commercial Research for Finish Mfr.

Lenoir Wood Finishing Co.

On September 8th, 1941, Mr. A. E. Verbyla, Secretary-Treasurer of Lenoir Wood Finishing Co., Inc., Lenoir N. C., purchased the balance of corporation stock from Mr. & Mrs. A. G. Spencer and is now the sole owner.

Mr. Verbyla was Works Manager for the Standard Varnish Works at the Staten Island and Linden, N. J. plants before coming south in 1938.

A full line of lacquers, sealers, stains and varnishes are manufactured at this plant and shipments are made throughout the South and Southwest.

Spray Painting Book— $1.50

Here is a book everyone can afford and everyone should have for reading and reference. It is new, copyrighted in 1941, contains 128 pages, 5x7½-in., is divided into 16 chapters, has 22 illustrations, is indexed, and is bound in cloth-covered stiff covers of dark blue lettered in gold. Contains chapters about paint, enamel, shellac, varnish, lacquer, synthetics, bronze finishes, flock, and pearl lacquer in addition to all types of modern spraying.

Nature Helps Balance Defense Shortage

It's an ill wind that blows no one some good, but how does the humble herring know all about it? The latest reports from Eastport, Maine, via H. E. Mattin of Mearlmaid fame, reveals an amazing herring catch in the Quoddy area off the coast of Maine. It bids fair to become the greatest herring catch in all history.

What does all this have to do with nature doing her bit to help the defense program? Lest we forget, pearl essence, which is made from the scales of herring, was, in fact, the the original aluminum finish. Aluminum finish, as we know it today, was originally developed to replace pearl essence used on automobiles. Now, with aluminum powder practically unobtainable, the humble herring delivers the greatest crop of fish scales on record, providing enough pearl essence to meet the demand for aluminum finishes by many industries.

NOW IS THE TIME

for all purchasing agents to come to the aid of their companies. There is no time for mistakes on Defense Orders, or rejects due to faulty finishing materials.

Specify SEA - LAC Primers, Lacquer Enamels, Synthetics, made to meet rigid government specifications.

Pints or carloads, there is no variation in quality or service. SEA-LAC Defense Orders are shipped on time . . . pass finishing tests every time.

Write now for quotations and full information.

You, too, may enjoy smooth sailing with—

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84 Lister Ave. Newark, N. J.

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metalworking, woodworking and miscellaneous industrial plants where production finishing is a major operation in parts and products manufacture.

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Editorial

Present and Future Trends That Will Affect You

Here are a few quick highlights of thoughts that came to mind after attending some of the sessions at the conventions held by the Federation of Paint and Varnish Production Clubs, and the National Paint, Varnish and Lacquer Association, in Chicago during the last week of October.

It is probable that the present Priorities System will be superseded by a system of Allocation, whereby manufacturers of finishing materials will be allocated specific quantities of certain raw materials during a given length of time. This system may be worked out after information is obtained in regard to each firm's customary requirements, what percentage of their products is going directly or indirectly to defense industries, and when it is determined how much domestic and imported raw materials of certain kinds may be available for the entire industry.

Really accurate information is impossible. Even if it were obtainable it would almost immediately become inaccurate because of rapidly shifting scenes and changing conditions, therefore whatever is finally worked out will probably fall short of being satisfactory to everyone. Men in the U. S. Government Service are only human, and they are looking to the paint, varnish and lacquer industry for facts, suggestions, recommendations, cooperation and help. They tell us that what the Army and Navy may specify and demand next week or next month, in the way of materials, is unknown, so it appears that the only thing "for sure" is uncertainty.

Production capacity on certain materials is increasing but demands for those materials are also increasing. Materials that are brought to this country in ships may become scarce; some of them may practically disappear from the market.

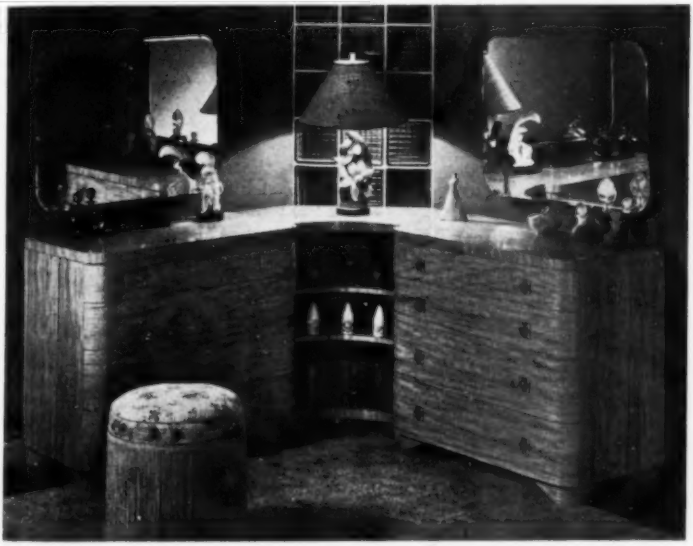
What we have to depend upon chiefly is our own resourcefulness and the resourcefulness of others in modern American industry. Substitute materials of many kinds and various qualities are going to

be found, developed and made available. Eventually some of these may be preferred to the materials we have become accustomed to using.

The once indifferent and careless squandering of essential materials, just to save a little time or trouble, is rapidly disappearing insofar as finishing-material users are concerned. *Today it is save, save, save. Prevent wastage of even the smallest items everywhere in the factory.* This applies to materials, supplies and equipment.

Back to varnish and oil enamels seems to be a certainty that many concerns now face. Even these materials may become scarce and high priced as the demand for them increases. The use of varnishes and oil enamels, which are slower drying than the lacquers and synthetics that we have to give up, will call for more cleanliness in former not-so-clean finishing rooms. Also, drying rooms, hot boxes and ovens are going to be in demand because some practical means must be provided for accelerating the drying of these materials.

Several leaders in the industry now refer to paints, varnishes and lacquers as "protective coatings", a name that more accurately classifies these materials as essential products for the defense industries and for civilian use. Following this thought, plus the present demand for less wastage of materials of all



A "natural" for the small home, this sectional group may be used in the bedroom, living room or dining room. The twin chests and corner bookcase-table combination are made of prima vera with plastic pulls. The lamp has a huge water lily forming the base and a woven straw shade to complete its Hawaiian appearance. Photo, American Furn. Mart.

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kinds, we have the opportunity and incentive to select and use coatings and treatments that really protect products made of wood, fabric, paper, metal and various composition materials which require finishing.

For example, the use of penetrating liquids or other treatments that will: 1) make inflammable materials fireproof or fire resistant; 2) make certain materials waterproof; 3) seal the surfaces of wood and other porous structural materials to make them as nearly as possible moisture proof and thereby prevent shrinking and swelling after finish coatings have been applied. Also, it is desirable to make more extensive use of rustproof coatings or treatments for iron and steel surfaces, and to use corrosion-proof and preservative coatings for the surfaces of other metals.

Decorative Colors That are Now in Style

Cool refreshing pastels and gay sparkling hues share high fashion honors in the resort and cruise collection of 16 Sun and Play Colors, just issued by The Textile Color Card Association to its members. Eight of these tones are shown in both silk and wool, while the remaining eight shades form a group of pastel tone-on-tones, the silk being a pale tint and the wool a deeper pastel.

In the latter range, the sea and beach motif is played up in Bluewater, a pale limpid tint, grouped with the deeper Sea Aqua; also in the alluring shell tones, Blush Pearl and Conch Pink, the latter inclining to the coral cast. Another combination is suggested in Daybreak Blue, an attenuated sky tint and Petal Blue, a flattering garden shade. Symbolic of our national defense is the soft dusty American Eagle Gold, allied with Golden Mist, a pale creamy yellow. While these companion shades may be used alone, they are especially smart and new looking in combination.

Prominent among the other shades in the card is Pebble Sand, a new version of natural. Two deep hazy pastels with a promising future are Patio Rose and Wave Green, the latter having a subtle bluish undertone. Sunbaked Tan, a warm outdoor shade, completes this group of four tones.

Four gay vibrant colors are also given top-fashion rating in sports and play cloths for wear in California and the sun spots of the South. This brilliant resort palette highlights American Beauty Red, a glamorous flower hue, Florida Lime, a tempting chartreuse tone. Yachting Green, a lighter

and bluer variation on the emerald theme, and California Lilac, the latter reflecting the increasing style interest in the violine gamme.

Mrs. Rorke, managing director, points ont that now, more than ever, America's fashion industries require the stimulating influence of fresh new color themes. It is therefore expected that this pastel and brilliant range will have wide appeal.

Furniture Varnish Drying; Not as Bad as in 1905

In commenting upon the likelihood of furniture factories having to return to the use of varnishes as substitutes for lacquers and synthetics, Mr. Thomas McGuire, President of The Schaefer Varnish Co., Louisville, Ky., points out that the situation could be worse. His evidence is a letter, dated Sept. 29, 1905, written by J. Fenton of the Buffalo (N. Y.) Chair Works, to Mr. Frank A. Chichester, finishing salesman. The letter:

"Referring to your call at our office yesterday and your statement that you could furnish a good finishing varnish for $1.25 per gallon. We are writing you now to say that if you can do this and can get a barrel here within, say one week's time, you may ship along a barrel. This is the price we are paying other parties but we are disposed to patronize you if you can furnish us a good article, *one that will give a good body and dry quickly so that it can be rubbed in five or six days.*

"We trust you will receive this letter this afternoon so that you can telephone us whether you are going to get this barrel to us or not."

Fortunately, furniture varnishes are now available that will dry in much less time than required 36 years ago. Both air-drying and baking types of varnishes, suitable for finishing furniture, are now on the market. Some of the better air-drying varnishes, it is claimed, will dry ready for rubbing over night, that is if they are dried in properly air-conditioned rooms at not less than 110° F. A baking type of varnish (baking temperature, 140° F.) will dry for rubbing in as short a time as four or five hours.

Of course, good judgment, reasonable care and some skill are required on the part of workmen entrusted to the important job of rubbing these quickly-dried varnishes — and the materials and equipment with which they do the rubbing must be suitable for the work.

Drying rooms or "hot boxes" are being designed and engineered so that the proper degree of heat may be maintained constantly, together with the necessary ventilation and

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humidity. In most cases conveyor finishing systems now in operation can be adapted to the use of baking varnishes with but slight alteration and adjustment. A baking temperature of 140° F., for five hours, is seldom, if ever, harmful to properly kiln-dried woods or their glue joints.

Fire-Retardant Paints; Borax

NO PAINT can be expected to protect wood effectively against long exposure to fire temperatures. The function of fire-retardant coatings is to retard the spread of small fires, and they offer the possibility of complete protection against fires of small size that might otherwise quickly develop beyond controllable proportions.

No satisfactory fire-retardant paint for exterior use is known to the Forest Products Laboratory nor can the paints for interior use be recommended for very exacting appearance requirements. Paints have been developed for interior use, however, that afford protection against the small fire where appearance is not of major importance. The most successful of the paints of this type, developed by the Forest Products Laboratory, are paints containing borax in addition to various pigments.

The formulas for these paints are still in the experimental stage and the final limits of their performance are not known. The evidence thus far available, however, shows that they stand high in fire-retarding properties and the formulas are being made public for trial use during the period that will be required to bring out fully their advantages and limitations.

The properties of the borax-containing paints in controlling the spread of fire have been measured by the fire-tube test, which has been widely used in such work. . . .

Borax alone does not produce so satisfactory a coating as when it is combined with pigments, such as white lead, titanium-calcium, lithopone and zinc oxide. The pigments aid in providing better brushing qualities and hiding power. The method used thus far to prepare the borax paints at the Forest Products Laboratory is as follows:

Borax, ground in a pebble mill and screened through a 200-mesh sieve, is mixed with raw linseed oil by grinding in a pebble mill to produce a stock preparation containing two parts of borax to one part of oil by weight. This borax-oil mixture is used for compounding with various pigment-oil pastes by hand mixing or by mixing in a

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paint mill. A few preparations have been made by grinding all of the ingredients in a pebble mill, but the hand method is preferable for small batches. Turpentine and drier are added before use.

More tests have been made on the white lead paint containing borax than on any of the others, and it proved to be somewhat superior in fire retardance to the paints containing other pigments. Although this paint did not stand up under outdoor exposure it resisted all but the most severe conditions of humidity indoors without serious loss of effectiveness in preventing the spread of flame.

From the standpoint of hiding power and brushing qualities, an unusually high percentage of borax is undesirable, but fire-retarding effectiveness is lost or decreased if the borax content is dropped too low. It is apparent that a balance must be maintained between paint quality and fire retardance. A minimum of at least 25% by weight of borax appears necessary.

To obtain maximum fire protection, heavy applications of the paint (3 or 4 thick coats or at least 8 gallons per 1000-sq.ft.) were found necessary. This is about twice the amount of paint ordinarily applied to woodwork. Coatings of ordinary thickness undoubtedly would provide protection against comparatively weak fires.

Fine grinding of the borax and subsequent milling in oil are necessary for smoothness. — FOREST PRODUCTS LABORATORY.

Finishine Laboratories Expands

Mr. E. W. Hagadorn of Finishine Laboratories, Inc., Syracuse, N. Y., advises that the company has purchased a 3-story brick building of 20,000-sq.ft. floor space, and employed a new representative, Mr. Nathan Manheim.

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INVESTIGATE Naz-Dar Silk Screen Stencils. They solve defense production problems, providing the means for rapid, inexpensive markings, airplane lettering, dials, insignias, etc. We also manufacture Silk Screen Paints to government specifications. WRITE US!

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Bleaching Wood

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The bleach manufacturer recommended a bleaching solution No. 1 and a bleaching solution No. 2. These solutions are used in conjunction with one another and must never be used separately. For work where time is no factor, the No. 1 bleach can be applied with a sponge and then followed by a coat of No. 2 bleach, after a lapse of three minutes. If the article is so big that it takes longer than three

minutes to be coated with the first bleach, another person should follow with No. 2 bleach. Rubber gloves should be worn when doing this work.

Where speed and production methods prevail, a suitable bleach can be obtained by mixing four parts of No. 1 bleach to one part of No. 2 bleach. This too can be applied with a sponge, thereby eliminating one complete step.

If, after several hours have elapsed, the individual in charge sees that the bleach is not thorough, another coat may be applied to continue the bleaching of the wood. This is left to dry overnight. Next day the work is washed off with plain water, making sure to cover the entire surface. When the surface is dry again it should be sanded with No. 220 sandpaper bringing it back to a smooth surface. This surface is now ready for staining, filling or any lacquer or varnish finishing. — JOHN F. WAGNER.

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Corrosion Control Corp. Moves Into Its Own New Building

The Corrosion Control Corp., Norwalk, Conn., has moved its executive offices, laboratory and entire manufacturing equipment into the company's own building at 34 Smith St., Norwalk, Conn. The company declares that improved and greater production facilities and complete modern research laboratories will enable the organization to render better and more complete service to the trade.

Rustproofing Engineer

William K. Cusick has taken charge of the engineering and sales work for the Irco Zinc Coat Division of International Rustfroof Corp., 12515 Plover Ave., Cleveland, Ohio. Mr. Cusick is a graduate of Ohio State University in Chemical Engineering and has had several years of experience in the rustproofing field, all of which will be valuable assets to him in solving many production probems. He was formerly with a manufacturer of rustproofing materials in Detroit, Mich.

New Report About Shellac

A new scientific publication, entitled "What You Should Know About Shellac" has just been released by the Stewart Research Laboratory, 1340 New York Ave., N. W., Washington, D. C. This is the first of an extensive series of "S. R. L." Research project reports. It is prepared in simplified form for paint and varnish dealers, home owners, floor refinishers, paint manufacturers and libraries. The report is mimeographed and nicely bound. There are 12 pages.

A copy of the publication is being mailed to any part of the world postage prepaid upon receipt of one dollar ($1.00).

The authors of the article, Mr. J. R. Stewart and Mr. C. R. Cornthwaite, were previously associated with Dr. Henry A. Gardner, Director of the scientific Section of the National Paint, Varnish and Lacquer Assn.,

Washington, D. C. At the present time, however, Mr. Stewart is connected with the Stewart Research Laboratory and Mr. Cornthwaite is a research associate at the National Bureau of Standards. The report is sold only with the understanding that the information will be kept confidential and not used for advertising or promotional purposes.

Bulletin on Product Washing Machines

A new and interesting folder, "How Seven Famous Companies Solved Their Product Washing Problems," was recently prepared and printed by The Alvey-Ferguson Co., Oakley Station, Cincinnati, Ohio. This company is now producing product-washing machines and metal-parts washing machines for industry, as well as scientifically planned conveying systems. Just now the company is also producing especially designed washing machines for shells, cartridges, gun barrels, machine gun parts and other defense products.

The bulletin folds to the 8½x11-in. size and is printed in three colors. Send for a copy.

"Protective Coatings, Inc." Is What Its Name Implies

Protective Coatings, Inc., 10391 Northlawn, Detroit, Mich., has been established to meet one of the more acute problems confronting defense manufacturing. The company features a complete range of products for the protection and preservation of materials used in manufacturing.

This line is known as the Tocol line and their service includes complete rubber insulation as well as a line of more than 35 products for the protection of building structures, metals used in production and for the protection of many types of materials against the ravages of the elements (water, sun, acids, and alkalis) as well as general wear.

Aquanil, a non-oxidizing waterproofing material, for concrete, stone, wood, brick and metals is one of the products in this line. Others are Deox, a metal conditioner for all metals; Helfyr, a coating that resists temperatures to 3000°F. and used principally for refactory linings; and Volcazite which protects metals against all forms of corrosion.

The company is headed by H. Tom Collord who has become well known to American industry during the last decade. Mr. Collord has, in the last few years, cooperated with a group of industrial laboratories in the development of unique and serviceable protective coatings.

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Index to Advertisers

Advance Paint Co. ..... Third Cover
American Richwood Products Co. 76

Berry Brothers 31
Binks Mfg. Co. 40-41

Campbell Co., M. L. 83-84-85
Chicago Eye Shield Co. 74
Christmas Seals 86
Classified Advertising 87
Claremont Waste Mfg. Co. 67
Crown Spray Gun Mfg. Co. 64

Day & Co., James B. 43
Despatch Oven Co. 73
DeVilbiss Co., The 34-35
Dolan & Company, V. J. 5
du Pont deNemours & Co., E. I. ..44-45
Duralac Chemical Co. 79

Enthone Co., The 10

Ferro Enamel Corp. 69-70-71-72
Finishine Laboratories, Inc. 77

Graining Roller Co. 82

Hammond Chemical Service 83
Hilo Varnish Corp. 75

Industrial Chemical Development Corp. 65
Industrial Tape Corp. 53

Koch Sons, Inc., George 6

Lilly Varnish Co. ..... Front Cover

M. & E. Mfg. Co. 87
Maas and Waldstein Co. 49
Mahon Co., The R. C. 36
Martin Varnish Co. 78
Mearl Co., The 33
Milburn Co., The Alexander 63
Minnesota Mining & Mfg. Co. 29
Mixing Equipment Co. 7

Naz-Dar Co. 85
North American Elec. Lamp Co. 84

Perfection Paint & Color Co. 5
Pulmosan Safety Equipment Corp. ..76

Randolph Finishing Products Co. 73
Reliance Varnish Co. 59
Rockford Varnish Co. 23
Roxalin Flexible Lacquer Co. ..... Second Cover
Rudd Lacquer Corp. 57

Schaefer Varnish Co. 66
Shellac Information Bureau 50-51
Solvents Recovery Service 83
Southern Varnish Corp. ..... Back Cover
Stanley Chemical Co. 39
Sterling Tool Products Co. 1
Stille-Young Corp. 9

Taber Instrument Co. 10

United Lacquer Mfg. Corp. 6

van Allen Company, L. R. 82
Varnish Products Co. 8

Walker Co., H. V. 25
Watson-Standard Co. 55
Westinghouse Lamp Division 61

Zapon Division—Atlas Powder Co. 2

WIDE AND VARIED INTERESTS exhibit a liking for Industrial Finishing magazine: ***Chrysler Corporation requests copy February, 1941, issue to replace one that has been lost . . . McQuay-Norris Mfg. Company states that copies will be routed, feeling certain that they will be of highly informative value to the foremen and executive groups . . . Standard Tank & Seat Co. refers way back to January number for information on material mentioned therein . . . W. A. Meyer requests change in address from New York city to American Can Company, South Bend, Ind., stating that he has always been interested and has obtained much valuable information from the magazine . . . D. W. Bunch, Point-O-Purchase Advertising Company, informs us that he has just seen his first copy of Industrial Finishing magazine and likes it very much; requests year's subscription beginning with article, "Substitution Finishes We May Turn To as a Result of our Defense Program" . . . Ad Infinitum.***

In these days of Priorities, Requisitions, Restrictions, etc., most everybody finds themselves more or less behind the proverbial eight ball. O'Shelac is no exception. At the present time we find it possible to take care of the normal demand for O'Shelac but are experiencing difficulties in trying to service any increase . . . and the demand is increasing rapidly. Since the cause for this condition (defense of America) is a worthy one, we are cheerfully making the best of it . . . and we appeal to you, our friends and customers, to do likewise. Let's all pull together until this important job is finished.

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